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METROPOLITAN CHICAGO

FIRST SERIES (1916-1938)

Materials for the Study of Business

EDITED BY DEAN LEON CARROLL MARSHALL AND
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SECOND SERIES (1938-1956)

Business and Economic Publications

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THIRD SERIES (1959-)

Studies in Business

EDITED BY DEAN W. ALLEN WALLIS

Metropolitan Chicago

AN ECONOMIC ANALYSIS

By EZRA SOLOMON
and ZARKO G. BILBIJA

GRADUATE SCHOOL OF BUSINESS,
UNIVERSITY OF CHICAGO

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To JANET

FOREWORD

THE PRESENT SERIES continues a publication program which the Graduate School of Business inaugurated in 1916. During World War I, the School (then known as the School of Commerce and Administration) sponsored a series called *Materials for the Study of Business,* designed for the purpose of "organizing the business curriculum into a coherent whole." Under the editorship of Dean Leon Carroll Marshall and Dean William Homer Spencer, over fifty titles were published through the University of Chicago Press, many of which have become classics in the field. Among these are:

John Maurice Clark, *Social Control of Business,* 1926. *Studies in the Economics of Overhead Costs,* 1923.

Paul H. Douglas et al., *The Worker in Modern Economic Society,* 1923.

Charles O. Hardy, *Risk and Risk-Bearing,* 1923.

James O. McKinsey, *Managerial Accounting,* 1924.

Harold G. Moulton, *The Financial Organization of Society,* 1921.

Theodore O. Yntema, *A Mathematical Reformation of the General Theory of International Trade,* 1932.

In 1938 the name of the series was changed to *Business and Economic Publications,* and under the editorship of Dean Spencer thirteen volumes were published through the McGraw-Hill Book Company, the last in 1953. They included:

Harry A. Millis and Royal F. Montgomery, *The Economics of Labor* (3 vols.), 1938.

Edward A. Duddy and David Revzan, *Marketing: An Institutional Approach,* 1947.

Billy E. Goetz, *Management Planning and Control,* 1949.

Concurrently with its series of books, the School published a monograph series, *Studies in Business Administration,* in which some seventy works appeared between 1929 and 1948, when the monograph series was discontinued.

The present series is in part a new venture in that it will differ from its predecessors both in scope and in content. In part, it simply continues the older tradition of publishing fundamental and applied research which contributes new knowledge and ideas important for the practice of business.

W. Allen Wallis
DEAN
GRADUATE SCHOOL OF BUSINESS
UNIVERSITY OF CHICAGO

PREFACE

This book investigates the economy of the Chicago metropolitan area in terms of the major variables used in modern economic analysis.[1] It presents specially prepared estimates of the size and structure of the area's population, labor force, employment, output, income, expenditures and saving. These measures, which are directly comparable with corresponding national statistics, provide the factual basis for an analysis of the area's development as an economic and financial entity—both in absolute terms and relative to the national economy of which it is an integral part.

During the three years in which research for the study was conducted we have incurred many obligations to many people. The study itself was made possible by a grant from the Finance Committee of the Chicago Association of Commerce and Industry under the chairmanship of James E. Day, President, Midwest Stock Exchange. The Graduate School of Business of the University of Chicago provided the time, facilities and research assistance required for the study.

None of the statistical measures developed for the Chicago metropolitan area could have been compiled without the helpful cooperation of the many agencies—both governmental and private—who assembled primary data relating to the area, and who allowed us access to their files of published as well as unpublished material. In this connection our thanks are due to the research and statistical staffs of the National Income Division of the United States Department of Commerce and especially to Charles F. Schwartz and Robert E. Graham, Jr. of that Depart-

1. The Chicago Standard Metropolitan Area as defined by the Bureau of the Budget in 1948. This consists of five counties in Illinois (Cook, DuPage, Kane, Lake, and Will) and Lake County, Indiana. All references in this book to Chicago, the Chicago Area or CMA apply to this area.

ment whose study *Personal Income By States Since 1929* provided the basis for the income series developed in this report; to the Unemployment Compensation Division of the Illinois Department of Labor; the Employment Security Division of the Indiana Department of Labor; the Federal Reserve Bank of Chicago; the Life Insurance Association of America; the Chicago Community Inventory at the University of Chicago and the Commonwealth Edison Company, all of whom provided information helpful to our work.

Our thanks are also due to the research staff who worked on various aspects of this project and in particular to Mr. William W. Alberts who prepared estimates of residential construction and mortgages, to Mrs. Charlotte H. Scott for her compilation of financial estimates and to John Goodell who helped with the preparation of tables.

Ezra Solomon
Zarko G. Bilbija

Haskell Hall
University of Chicago
1959

CONTENTS

CHAPTER		PAGE
1.	Metropolitan Economic Analysis	1
2.	Basic Data for the Chicago Economy	13
3.	The Level of Employment and Output	29
4.	Long-term Economic Growth	47
5.	Chicago's Economic Base	59
6.	Factors Affecting Future Growth	75
7.	Economic Stability	99
8.	Personal Income	113
9.	Personal Taxes, Expenditures, and Saving	129
10.	The Flow of Saving	139
11.	Technical Appendix: Sources and Methods of Estimation	159
	A. GENERAL	159
	B. NONAGRICULTURAL WAGE AND SALARY EMPLOYEES	162
	C. POPULATION, LABOR FORCE, AND EMPLOYMENT	167
	D. CIVILIAN WAGE AND SALARY DISBURSEMENTS	170
	E. PERSONAL INCOME RECEIVED	174
	F. CIVILIAN INCOME PRODUCED	178
	G. PERSONAL DISPOSABLE INCOME	185
	H. PERSONAL CONSUMPTION EXPENDITURES	187
	I. EXPENDITURES ON NEW DWELLING UNITS	191
	J. SELECTED FINANCIAL ASSETS AND LIABILITIES OF INDIVIDUALS	194
Index		203

LIST OF TABLES

PAGE

CHAPTER 1

1. Chicago Metropolitan Area (CMA) and Surrounding Regions, Area and Population, 1950 14
2. Labor Force and Employment, U.S., 1957 15

CHAPTER 2

3. Population, Civilian Labor Force, and Employment in CMA, 1940, 1946-58 20
4. Employees in Nonagricultural Establishments, by Industry, CMA, 1940, 1946-58 21
5. Employees in Manufacturing Industries in CMA, 1940, 1946-58 22
6. Civilian Wages and Salaries, by Industry, CMA, 1940, 1946-57 23
7. Wages and Salaries in Manufacturing Industries, CMA, 1940, 1946-57 24
8. Civilian Income Produced, by Industry Group, CMA, 1940, 1946-57 25
9. Civilian Income Produced, by Distributive Share, CMA, 1940, 1946-57 26
10. Civilian Personal Income, CMA, 1940, 1946-57 27

CHAPTER 3

11. Civilian Income Produced, CMA and U.S., 1940, 1946-57 30
12. Resident Population in CMA and U.S., 1930, 1940, 1946-57 30
13. Per Capita Civilian Output, CMA and U.S., 1940, 1946-57 31
14. Factors Contributing to Higher Per Capita Output in CMA, 1940, 1946-57 31
15. Distribution of Population by Age Groups, CMA and U.S., 1940, 1950, 1955 34

16. Total Resident Population by Age, CMA as Per Cent of U.S., 1940, 1950, 1955 35
17. Labor Force Participation Rates, by Sex and Age, CMA and U.S., 1950 35
18. Proportion of Population in Labor Force, 1950, Large Metropolitan Areas 36
19. Employment Characteristics, CMA and U.S., 1940, 1946-57 37
20. Civilian Labor Force and Employment, CMA Share in U.S., 1940, 1946-58 37
21. Output per Worker, by Industry, U.S., 1956 39
22. Man-Hours Worked per Production Worker in Manufacturing Industries, CMA and U.S., 1956 40
23. Average Weekly Hours in Manufacturing Industries, CMA and U.S., 1953, 1954, 1956 42
24. Value-Added by Manufacture per Man-Hour, CMA as Per Cent of U.S., 1954, 1955, and 1956 43

CHAPTER 4

25. CMA Population, Population Share, and Growth Ratios, 1840-1957 48
26. Index of Manufacturing Employment, CMA, U.S., and CMA Share, 1849-1956 48
27. Population and Manufacturing Employment, Components of Change in CMA Share, 1840-1957 51
28. Population and Manufacturing Activity in U.S., Distribution by Geographic Regions, 1899-1956 52
29. Regional Index of Industrialization, 1899-1956 53
30. Value-Added by Manufacture and New Capital Expenditures in U.S., Distribution by Geographic Regions, 1939-56 57
31. CMA Share in ENC Region, 1939, 1947, 1956 58

CHAPTER 5

32. Employment Concentration Ratios, U.S. and CMA, 1940, 1956 66
33. Employment Location Quotients in CMA, 1940 and 1956 67
34. Employment Attributable to "Export" Activities in CMA, 1940, 1956 68
35. CMA Regional Output Balances, 1956 70
36. Employment Attributable to Exports in CMA, 1956 71
37. Chicago's Economic Base, 1956 72

CHAPTER 6

38. Business Capital Formation, U.S., 1955 86
39. Large Industrial Contract Awards, CMA and U.S., 1946-57 88
40. Industrial Construction Contract Awards, CMA and Other Major Metropolitan Areas, 1953-57 88
41. Industrial Construction Contract Awards, by Industry, CMA, 1945-57 90
42. Capital Expenditures and Value Added by Manufacture, CMA Share in U.S., 1947, 1954-56 92
43. Indicated Trends in Manufacturing Growth, CMA, 1947-57 95
44. CMA Share in U.S. Nonmanufacturing Employment, 1947-57 97

CHAPTER 7

45. Index of Wage and Salary Workers in Nonagricultural Industries, CMA and U.S. 104
46. Number of Workers in Durable Goods Industries as Per Cent of Total Employment in Manufacturing, Fifteen Largest Metropolitan Areas, 1947 and 1954 107
47. Unemployment as Per Cent of Total Civilian Labor Force, CMA and U.S., 1953, 1954, 1955, 1957, 1958, 1959 108

CHAPTER 8

48. Civilian Income Produced by Distributive Share, CMA, 1940, 1946, 1950, 1955 113
49. Civilian Income Produced and Personal Income Received, CMA and U.S., 1955 114
50. Civilian Personal Income, CMA, ENC States and U.S., 1929-57 115
51. Consumer Price Index, U.S., and Chicago, and CMA's Share in Purchasing Power, 1940, 1946-57 116
52. Per Capita Civilian Personal Income in Current and Constant 1947-49 Dollars, CMA as Per Cent of U.S., 1940, 1946-57 118
53. CMA Share in Various Classes of Personal Income, 1940, 1946-57 121
54. Population and Civilian Personal Income, CMA, U.S., and Selected Areas, 1940 122
55. Population and Civilian Personal Income, CMA, U.S., and Selected Areas, 1957 123
56. Per Capita Civilian Personal Income, by Type, CMA, U.S., and Selected Areas, 1940 123

57. Per Capita Civilian Personal Income, by Type, CMA, U.S., and Selected Areas, 1957 124
58. Per Capita Civilian Personal Income, by Type, CMA and Selected Areas, 1940 and 1957 124
59. Median Family Income in 1949, Fourteen Large Metropolitan Areas 127

CHAPTER 9

60. Personal Taxes and Disposable Personal Income, CMA, 1940, 1950, 1955 131
61. Personal Consumption Expenditures, CMA, 1950 and 1955 134
62. Personal Saving Data, CMA and U.S., 1950 and 1955 136

CHAPTER 10

63. The Flow of Individual Saving, CMA and U.S. 141
64. Financial Assets of Individuals, CMA and CMA Share in U.S. 142
65. Per Capita Holdings of Financial Assets, CMA and U.S., 1945, 1955 144
66. Composition of Financial Asset Holdings, CMA and U.S., 1945 1955 145
67. Index of New Dwelling Unit Activity, CMA and U.S. 151
68. New Private Dwelling Units Started, CMA, 1947-57 153
69. Expenditures on New Dwelling Units, CMA and U.S., 1947-57 154
70. Ratio of Expenditures and New Dwelling Units to Civilian Personal Income, CMA and U.S., 1947-57 155

LIST OF EXHIBITS TO TECHNICAL APPENDIX

PAGE

1. Manufacturing Wage and Salary Workers, by Industry, CMA, 1952 164
2. Nonmanufacturing Employment, by Industry, CMA, 1952 165
3. Employees in Manufacturing Industries in CMA, Comparison of BOASI Report with BLS Data, 1953 165
4. Nonmanufacturing Employment in CMA, Comparison of BOASI Report with BLS, 1953 166
5. Alternative Population Estimates, Illinois, 1952-57 167
6. Population Estimates, CMA, 1952-57 168
7. Unemployed Civilian Labor Force in Chicago-Calumet Area 170
8. Earnings per Worker in Manufacturing Industries, CMA as Per Cent of Illinois and Indiana—Comparison of BOASI and Census Data, 1947 173
9. Personal Income by Major Sources, CMA, 1955 175
10. Composition of U.S. National Income—By Distributive Share, 1955 179
11. Personal Consumption Expenditures in CMA, 1950 and 1955 188

CHARTS

CHART	PAGE
1. Nonagricultural Wage and Salary Workers in CMA: 1952-59 (Thousands)	*101*
2. Nonagricultural employment index: CMA and U.S., 1953-55	*102*
3. Index of total nonagricultural employment, CMA and the rest of U.S., 1957-59	*103*
4. Unemployment as per cent of total Civilian Labor Force: U.S. and CMA, 1953-55	*109*
5. Unemployment as per cent of total Civilian Labor Force: U.S. and CMA, 1957-59	*110*

METROPOLITAN CHICAGO

Chapter 1

METROPOLITAN ECONOMIC ANALYSIS

Our present understanding of individual regional economies within the nation, especially at the metropolitan level, is far less complete than our understanding of the economy as a whole. Indeed, we probably know more about the economies of most foreign nations than we know about our own major cities. Since over a third of national economic activity is centered in the ten large metropolitan areas of the United States, our lack of understanding of these individual markets represents a serious gap in our stock of economic information.

During the past decade there has been a growing interest in remedying this deficiency through improvements in the scope and quality of regional economic information and analysis. Public agencies at all levels have been giving increasing emphasis to the systematic collection and publication of basic economic data for the individual states and metropolitan areas. Private agencies, including those which traditionally have been concerned with nation-wide economic analysis, have also paid increasing attention to the regional dimensions of economic problems and policies.[1]

The reasons for this growth of interest are not hard to find. One reason is the wide and successful use which has been made of the improved data available at the national level as a guide to governmental and business planning. Today these data are

1. For a discussion of the need for and uses of regional data see Committee for Economic Development, *The Little Economies* (New York: Committee for Economic Development, 1958); National Bureau of Economic Research, "Studies in Income and Wealth," *Regional Income* Vol. XXIII [Princeton: Princeton Univ. Press, 1957] and Regional Science Association, *Papers and Proceedings*, 1957, Vol. III, Chaps. 1-5.

regarded as indispensable tools for a broad variety of private and public decisions. With this use has come increasing realization that there are a score of equally important decisions which require regional rather than national data. The planning of public works, urban redevelopment, fiscal problems of local governments and the solution of area-development problems—all of these would be helped considerably if we had local information of comparable scope and quality to that which we now have for the nation as a whole. Private business also requires such information as a basis for intelligent judgments. Firms which operate in one or more local market areas obviously need local economic data. Nation-wide firms also need such data as a basis for deciding where to locate their production facilities, assembly operations, and distribution and marketing efforts.

Unfortunately the body of existing local economic information, though large and varied, does not provide an adequate factual basis for most of the policy decisions which need to be made. As the Chairman of the Committee for Economic Development has described it, "We do not know very much about the economics of our little economies. Facts are inadequate, statistics obscure, the framework fuzzy. Knowledge concerning what goes on in our local economies, be they communities or states or regions, is in a relatively primitive state. The situation is comparable to our lack of knowledge about the national economy prior to about thirty years ago when we began to develop our first system of national accounts."[2]

This lack of understanding of the little economies within the nation can be traced to three factors. One factor, which cannot be remedied except at considerable cost, is that evidence on certain kinds of economic activity is simply not available on a local basis. For example, we have no direct count of regional exports and imports of goods and services. Since a substantial share of economic activity within regions is directly related to these "external" economic connections, this deficiency alone is a significant gap in regional economic information. The smaller the area being studied, the more important does this gap in informa-

2. Jervis J. Babb, "Problems of Local Growth and Area-Development," *The Little Economies*, p. 9.

tion become. An equally important gap in basic data exists in connection with information derived from corporate records. Important segments of corporate data, especially of nation-wide firms, cannot easily be collected for small areas. Finally, an increasing number of useful economic measures are now based on evidence contained in sample surveys. In many cases this evidence cannot be used as a reliable basis for estimating corresponding measures for small areas.

This unavoidable gap in certain types of basic information is not in itself a prime cause of our relative ignorance about local economies. Far more important is the fact that the basic information which *is* available at the local level has not been organized into a coherent and meaningful body of economic statistics. Thus, although local economic information has been collected for at least as long as national information, metropolitan data still consists of a large and unsystematic collection of fragmentary and unrelated facts. In contrast, national economic information, both here and abroad, has been assembled within a unified system of inter-related accounts. Furthermore, local data has suffered from frequent changes of definition in the areas for which information has been reported as well as changes in definition of the economic variables being measured, without any serious attempt to provide the statistical continuity essential to economic analysis. Fortunately this serious defect in local information can be rectified, and in the past few years several preliminary steps have been undertaken to remedy this source of incoherence in our stock of metropolitan data.

One important step was the institution in 1948 of standard metropolitan definitions for purposes of census reporting. Prior to this standardization there had been little uniformity in the local areas covered by the various data-collecting agencies. While the establishment of standard areas for census purposes has not solved all problems relating to the continuity and uniformity of local statistical measures, it did provide a standard and relatively permanent basis for local data collection. As a result, other data-collecting agencies—though by no means all—have begun to assemble and publish local data in terms of the standard areas adopted by the Bureau of the Census.

In spite of the considerable progress which has been made during the past decade in getting more and better information on the local level, the systematic interpretation of metropolitan economic data, comparable in scope and quality to economic analysis at the national level, is still in its infancy. This is due in part to the fact that governmental agencies responsible for the collection and presentation of regional economic statistics have been reluctant to engage in the analysis and interpretation of data for the large number of individual areas which exist. In part it is due to the fact that much of the original interest in metropolitan problems has arisen outside the field of economics proper. Research in this area has centered and still centers mainly around problems of demography, sociology, urban geography, and planning. Although people working in these disciplines have made wide use of economic information, the economic aspects of local area analysis have been invariably treated as subsidiary.

It is only in the past few years that economic analysis as such has been applied to the systematic measurement and interpretation of metropolitan economies as individual entities. While it is clear that the full scope and quality of the data and analysis which exist at the national level will never be fully reproduced for each individual local area, it is equally clear that a systematic treatment of already existing information can improve our understanding of local problems and the quality of business and government policy decisions at these levels.

The present study is part of this recent attempt to increase our understanding of local economies through the development of comprehensive economic measures for the area. Although the study is concerned exclusively with the economy of the Chicago Metropolitan Area, the technical and theoretical problems covered are common to all forms of metropolitan analysis.

METROPOLITAN ECONOMIC DATA— PROBLEMS AND LIMITATIONS

Four sets of basic economic accounts are required for a comprehensive economic analysis of an area: employment, output,

income, and saving. These four series are closely related and complementary: together they provide the factual basis for analyzing the structure and growth of aggregate economic activity in an area.

None of these measures is available for metropolitan areas and, of the four, only employment and income are available on a state-wide basis. However, enough primary evidence exists from which metropolitan estimates for all these measures can be constructed. It is clear that not all such estimates will be equally reliable in a purely statistical sense, nor can they be obtained in the same rich detail as national data. But taken together they do provide a comprehensive basis for regional economic analysis.

Regardless of the economic measures available or the general analytical approach used for metropolitan analysis, an examination of the absolute size, structure, and growth of local economy will not be particularly revealing unless it is supplemented by a study of the *relative* behavior of each variable as compared against its corresponding national counterpart. Analysis in absolute terms requires that the regional data used must be consistent over the entire period being studied. Relative analysis, on the other hand, requires that these data must be statistically comparable with the national series to which they correspond.

This twin requirement of statistical continuity and comparability precludes the possibility of using much of the readily available stock of local data for purposes of regional economic analysis. Several items of economic information available for smaller areas, particularly those assembled by local agencies, are rendered virtually useless for analytical purposes because comparable national statistics are not compiled. In addition, some information on metropolitan areas cannot be used directly because the individual enumerations on which they are based are not comparable over a period of time, even though conceptually corresponding national statistics might be available in each case.

Considerable time and effort in this study have been devoted to the preliminary task of adjusting the basic statistics in order to make them conform to these two requirements of statistical comparability and continuity. All of the series contained in the study are directly comparable to the corresponding national series

published by the U.S. Department of Commerce, the U.S. Bureau of Labor Statistics, and other federal government agencies. In all major tabulations of local data contained in this study, a specific reference to its corresponding national or state counterpart is given. In addition, every effort has been made to ensure that each local series is on an internally consistent basis for the period 1940-57, covered by the statistics. Because this requirement could not be adequately satisfied for the war years, the sub-period 1941-46 has been omitted.

Although our basic understanding of local economy is considerably enhanced by the compilation of such local economic accounts, both the statistical and analytical findings derived from them are subject to limitations which ought to be noted. These limitations become obvious when the structure of the national economic accounts is examined in detail.

The accounts which describe the national economy are constructed within a self-contained system of double entry bookkeeping. Within this system, sources and uses of income and saving—including foreign transactions—can be counted independently and checked against the conceptual equalities which must exist between debit and credit entries. Specifically, the total national output of goods and services during a given period can be measured either in terms of the expenditures by which that output is acquired or in terms of income and other payments made to those who participate in the production of that output. These two alternative measures are derived from relatively independent sources and therefore each provides a reasonable check on the accuracy of the other.

Metropolitan estimates, on the other hand, are essentially single-entry accounts derived by apportioning appropriate parts of national totals to a given area. Most local economic accounts therefore, measure only one aspect of economic activity—namely, income flows which originate within the boundaries of local economy. This is unavoidable because we have no direct evidence on economic transactions flowing across area boundaries since in the absence of custom-barriers there is no way of statistically intercepting such flows. Because a metropolitan area is essentially an "open" economy, unlike the nation as a whole, a large number of

significant transactions with outside areas go unrecorded. This is particularly true in the case of economic flows originating in corporations with nation-wide operations. Similarly, little is recorded of an area's economic relationship with the Federal Government through revenue and expenditure flows. Because of these gaps in our information, the output and expenditure side of a local economy cannot be measured independently.

In the absence of complete accounts, some of the information derived from regional data, especially on the output and expenditure side, must be based on indirect rather than direct evidence. Although this procedure can yield important and useful insights, minor variations revealed by such indirect evidence must be ignored since they could easily arise from random errors inherent in the estimating procedures used, for which few independent checks exist.

The statistical measures of the Chicago Metropolitan Area economy contained in this study should be viewed with these limitations in mind. Apart from estimates covering the number of wage and salary workers, Chicago data are constructed from known state, regional, or national totals by means of a systematic and detailed apportionment of those totals—generally on an industry by industry basis. The allocators used vary from highly reliable, continuous, and relevant pieces of evidence, on the one hand, to broader relationships which are known only for selected bench-mark years, on the other. The reliability of data derived by this process depends to a considerable extent on the accuracy and relevance of the allocating ratios used.

In using the various Chicago estimates for analytical purposes, it is necessary that the depth of the analysis should proceed no further than is warranted by the accuracy of the estimates themselves. These are discussed in detail in the Technical Appendix to this volume. In brief, the estimates of wage and salary employees and payrolls disbursed have a high degree of reliability, and can be used with confidence for relatively detailed analysis. Other components of personal income, especially of property income flows, are less reliably based and can be used as a basis only for less detailed judgments. The same is true of output estimates, particularly for the corporate share of local output and

income. At the other extreme, measures of personal taxes and of personal consumption expenditures and saving, while useful for broad analytical purposes, are relatively crude estimates and should therefore not be subjected to detailed analysis.

In addition to problems of estimation, metropolitan analysis is also beset with problems of interpretation. For example, it is necessary when analyzing metropolitan area statistics to think not only in terms of the absolute size and growth of these variables but also to study them in relative terms. Thus, an examination of Chicago's share in the American economy and of the per-capita differentials which exist between Chicago, on the one hand, and other regions, on the other, are essential tools of metropolitan economic analysis. However, these relative indexes may vary because of changes which are taking place in the economy as a whole rather than in the area being studied. For example, Chicago's share in total nonagricultural employment declined between 1946 and 1957 even though its share in total employment was rising during this period. This is due, of course, to the fact that agricultural employment, which plays a much larger part in the nation than it does in Chicago, has been declining rapidly. Because of this dual effect to which relative variables are subject it is necessary to examine a number of relationships in order to identify the initiating source of observed changes in any single series.

THE CHICAGO METROPOLITAN AREA

The very first problem one encounters in embarking on any regional economic study is that of selecting the specific area to be analyzed. As far as regional demarcation is concerned, there is no single "all purpose" ideal. What areas appropriately belong in the "Chicago market" for example depends on what kind of market one is studying. Thus alternative definitions of the Chicago area which have been used for different purposes vary all the way from the City of Chicago at one extreme to the entire Seventh Federal Reserve District on the other.

The particular definition used in this study is the integrated six-county unit comprising the standard Chicago Industrial Area as this was defined in 1919 and which was later adopted as the standard Chicago Metropolitan Area when this concept was established in 1948 for purposes of census reporting. Thus, this study is essentially small-area analysis rather than regional analysis in the broader sense. This choice was dictated by several considerations: (1) metropolitan areas are the primary units in the American economy; (2) each of these units has distinctive characteristics with respect to employment, output, and income which tend to be lost when metropolitan data are merged into larger less homogeneous totals; (3) the major metropolitan areas account for a very large proportion of total nonagricultural economic activity and for an even larger proportion of changes in this activity; (4) most pressing problems of governmental and business policy require information at the metropolitan level; and (5) separate data for individual areas can always be combined into larger units whereas information on larger regions cannot easily be broken down into component parts.

The choice of the standard metropolitan area as the basic small-area unit in society is itself a compromise between a definition which is ideal and one which is practicable. Ideally, the basic economic unit in society should be defined so that it circumscribes a contiguous area of integrated economic activity which clusters around a center toward which these activities tend to gravitate. The boundaries of such an area should be drawn so that it encompasses the places of residence of virtually all of the people who work and shop in the area. In technical terms, such a unit can be conceived of as the minimum definition which satisfies the condition that an overwhelming part of income payments made by establishments situated in the area defined is received by people resident in it.

However, attaining this ideal is only one of the considerations which must govern the definitional decision. A great deal of basic economic information necessarily originates with agencies of state and local governments. These political units are also important potential users of local economic analysis and information. Because economic boundaries rarely coincide with existing political boun-

daries, it becomes necessary to work out a compromise between considerations of economic demarcation and those of statistical availability, continuity, and convenience. The compromise used by the standard metropolitan concept is that it employs whole counties as basic building blocks in defining metropolitan areas.[3] The use of whole counties provides a tie-in with permanent political boundaries and thus provides for continuity of an area's geographical size. Alternative definitions, which disregard county lines in an attempt to follow existing urban or industrial boundaries with precision, suffer from the fact that areas defined in this way change continuously. As a result, statistics based on these changing area definitions suffer from a serious lack of historical comparability. Two such small-area concepts—that of the standard metropolitan district and of the standard urbanized area—which had been used for census reporting purposes prior to 1950, were abandoned because of this defect. Although definitions of standard metropolitan areas are also subject to changes over time, these changes take the form of inclusion or exclusion of whole counties. Thus, the usefulness of historical data are not destroyed because data for many basic series are available on an individual county basis.

The establishment of standard metropolitan areas based on whole counties solves many but not all of the problems associated with defining small economic areas. Some difficulties remain, and two of these deserve examination.

(1) One problem arises from the fact that not all data-collecting agencies have adopted the standard metropolitan area as a reporting unit in the presentation of statistical information for which they are responsible. Although this is due, in most cases, to valid practical considerations, a change to the standard definition would add considerably to the stock of metropolitan economic information without detracting seriously from the original purpose for which the statistics are intended.

A change in this direction would be particularly important in the case of labor force and unemployment estimates provided by the Illinois Department of Labor in co-ordination with the U.S. Bureau of Labor Statistics. For this purpose, the Chicago

3. This does not apply to areas in the New England region.

labor market area is defined to cover only Cook and DuPage Counties. A broader definition used by the same agency is the Chicago-Calumet labor market area, which includes Lake County, Indiana in addition to Cook and DuPage Counties in Illinois. Although the agency provides continuous monthly data on labor force conditions for both of these areas, comparable data for the whole standard metropolitan area are not available.

A similar situation exists with financial data compiled by the Federal Reserve Bank of Chicago. The Bank accepts the six-county definition, but it excludes banks which are located in places deemed to be essentially rural in character, even though these places are located within the metropolitan counties. Finally, private sources of local data, such as local utilities, railroads, and newspaper research bureaus, generally define the Chicago area in individual ways that seem best to suit their own specific needs for market analysis.

(2) A second problem exists because standard metropolitan areas are themselves subject to change between one census and another. Because of the criteria used in defining metropolitan areas, two changes are likely to affect the definition of the Chicago Metropolitan Area in the near future.[4] The increase in the number of people who live in McHenry County but who work in Cook County, will probably lead to the inclusion of that County in the Chicago Area in the next census. The metropolitan status of a county can also be altered as a result of an increase in the size of the labor force resident in it without a corresponding increase in the number of workers commuting to the central metropolitan county. In such a case the ratio of commuting workers to total labor force in the county could fall below the 15 per cent required for continued inclusion in the metropolis, and the county would then be excluded. This situation is likely to arise in Lake County, Indiana, which will probably be excluded from the Chicago Metropolitan Area for purposes of the 1960 census.

Neither of these problems creates insuperable difficulties. The

4. A county is assumed to be part of a metropolitan area if (a) at least 15 per cent of nonagricultural workers living in the county work in the central county of the area or (b) if at least 25 per cent of the nonagricultural workers employed in the county live in the central county or (c) if telephone calls from the county to the central county average four or more calls per subscriber per month. See U.S. Bureau of the Census, *Census of Population 1950,* Vol. II, Part 1, p. 27.

question of historical discontinuity can be eliminated even with changing definitions of metropolitan areas if the official data-collecting agencies provide information either on an individual county basis or for both the old and the new definition of an area whenever a change in metropolitan definition occurs.

OUTLINE OF THE ANALYSIS

The basic economic series for the Chicago area are presented in the following chapter, together with a brief description of each of the economic measures they contain. The remainder of the book falls into three sections. The first analyzes the economy of the area in terms of the level, structure, and growth of employment and output. The second—on income, expenditure, and saving—examines the flow of personal income received in the area and the ways in which this income is spent and saved. The final section consists of a technical appendix which describes the major statistical procedures and sources used in deriving the metropolitan estimates contained in this study.

Chapter 2

BASIC DATA FOR THE CHICAGO ECONOMY

This chapter presents the major statistical series developed for the Chicago area. The basic tables are preceded by a brief description of national and state economic data to which the local estimates are directly related. Specific details of the sources, methods, and procedures which were used in constructing the local estimates are covered in the Technical Appendix to this study.

The Chicago Metropolitan Area. Unless specifically noted, all local estimates refer to the Chicago Standard Metropolitan Area as defined in 1948. The size and population of this area (referred to in all tables as CMA) and of its constituent parts, are shown in Table 1 below. The Table also provides information on the scope of several alternative definitions of the Chicago area which are in use and of the broader regional areas centered on Chicago.

Population. The population estimates used in this study are based on census enumerations and on inter-censal estimates for Illinois counties and Lake County, Indiana, compiled by the Chicago Community Inventory at The University of Chicago. These estimates have been adjusted to conform with the annual inter-censal population estimates for Illinois and the nation prepared by the U.S. Bureau of the Census. Because of these adjustments there are minor differences between the population estimates in this study and those published by the Chicago Community Inventory.

Employment. Two separate sets of employment data are widely used in national economic analysis. One, prepared by the

Table 1
Chicago Metropolitan Area (CMA) and Surrounding Regions
(Area and Population, 1950)

Area or region	*Population (Thousands)*	*Land Area (Square miles)*
Chicago Standard Metropolitan Area	5,495.4	3,617
In Illinois	5,127.2	3,103
Cook County	4,508.8	954
City of Chicago	3,621.0	208
Suburban Cook County	887.8	746
DuPage County	154.6	331
Kane County	150.4	516
Lake County	179.1	457
Will County	134.3	845
Lake County, Indiana	368.2	514
Other Contiguous Counties:		
McHenry County, Illinois	50.6	611
Porter County, Indiana	40.1	425
Other areas:		
Six-county North-East Illinois Metropolitan Area	5,177.8	3,714
Two-county North-West Indiana Metropolitan Area	408.3	939
Eight-county Extended Chicago Metropolitan Area	5,586.1	4,653
State of Illinois	8,712.0	—
State of Indiana	3,934.0	—
Great Lakes States*	30,399.0	—
Seventh Federal Reserve District	22,061.0	—

*Also known as East North Central Region. Includes Ohio, Michigan, Illinois, Indiana, and Wisconsin.
Source: *U.S. Census of Population, 1950.*

Bureau of Labor Statistics of the U.S. Department of Labor (known as the BLS series) measures the number of nonagricultural wage and salary employees.[1] This statistic is derived from a sampling of non-farm establishments for which payroll data are compiled on the number of employees who received pay for any part of a specified period.[2] It refers to the number of jobs held rather than to the number of people employed, because it is possible for the same person to appear on two separate establishment payrolls in the same period. Self-employed persons, unpaid family workers, domestic workers, and members of the armed forces are not counted in the BLS series. Although it does not provide a complete count of all employment as such, the BLS employee series does provide a detailed industrial and regional

1. U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review* and *Employment and Earnings.*
2. See U.S. Bureau of Labor Statistics, *Technique for Preparation of Major BLS. Statistical Series,* Bulletin No. 1168, 1954.

classification of jobs held. As such, it is a major tool of regional economic analysis.

A second major statistic on employment is that provided by the Bureau of the Census. This is derived from a sampling of households and covers all categories of employment. In addition, it provides data on the number of unemployed persons. The census employment total is broken down into the broad categories shown in Table 2 below, but does not provide a detailed classification of employment by industries.

Table 2
Labor Force and Employment, U. S., 1957
(Thousands)

Total Labor Force	70,744
Armed Forces	2,797
Civilian Labor Force	67,946
Unemployed	2,936
Civilian Employment	65,011
Agricultural	6,222
Nonagricultural	58,789
Self-employed*	6,715
Domestic Service Workers	2,328
Wage and Salary Workers	49,746

*Includes unpaid family workers.
Source: U.S. Bureau of the Census, *Annual Report on the Labor Force: 1958* (Current Population Reports, Series P-50, No. 89).

Because of conceptual differences and sampling variability, the total number of wage and salary workers (excluding domestic service workers) reported in the Census series differs from the BLS total. In 1958, for example, the BLS statistic averaged 52,162 thousand as against a Census total of 49,746 thousand. On an average annual basis the BLS total has consistently exceeded the Census total by amounts varying from 1.5 to 5.0 per cent.

The BLS data have been made available on a state-wide basis since 1939 and more recently for selected metropolitan areas. For the Chicago Metropolitan Area these statistics have been compiled since 1952.[3] Census data, on the other hand, are not available by individual states. Nor can the census sample be used in order to construct reliable estimates for states or smaller areas.

Two separate employment estimates for the Chicago Metro-

3. Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours and Earnings in the Chicago Metropolitan Area,* monthly.

politan Area are used in this study, and both are necessary. One is the regular BLS series, which has been pushed back to 1940 on the basis of state data and secondary evidence available in periodic censuses. This series which is available by major industrial groups and manufacturing sub-groups provides the basis for payroll estimates and for all analytical findings involving the industrial structure of the area.

For purposes of estimating total labor force and employment in the area, it was necessary to construct a local series which is statistically comparable to the Census estimates available for the nation. For this purpose, the local BLS series was statistically adjusted to the census basis for wage and salary workers, and these totals were then combined with separate estimates for those categories of the labor force not covered by the BLS estimate.

Income. The total flow of income received by persons is one of the broadest measures of economic activity on a regional basis; and the mainstream of regional economic measurement has run in terms of one variety or other of personal income. Until relatively recently, income payments originating in an area was the primary measuring tool.[4] However, in 1956, the U.S. Department of Commerce published detailed estimates of personal income received in the individual states which tie-in directly with their data on total personal income received in the nation.[5]

Estimates of personal income received in the Chicago Metropolitan Area, by major type, were compiled from published and unpublished details for Illinois and Indiana provided by the U.S. Department of Commerce and from secondary sources. These estimates tie-in directly with the body of state and national statistics released by the U.S. Department of Commerce prior to the 1959 revisions.[6]

Output. Economic output can be estimated at several different

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4. See National Bureau of Economic Research, *op. cit.*, p. 5.

5. U.S. Department of Commerce, Office of Business Economics, *Personal Income by States Since 1929* (Washington: 1956).

6. In 1958 the Department of Commerce revised its estimates of national income and product data. (See *U.S. Income and Output*, A Supplement to the Survey of Current Business, 1959.) The CMA estimates contained in this study were constructed to tie-in with the earlier series published in *National Income*, 1954 ed., *Survey of Current Business*, July 1957, *Personal Income by States Since 1929*, and *Survey of Current Business*, August 1957. All comparisons between Chicago and the U.S. refer to these unrevised national estimates.

levels of inclusiveness. For the nation as a whole, the value of output produced can be measured in terms of the following categories: (a) total payroll payments; (b) total national income—in addition to payrolls this includes net rents, interest, and profits; and (c) total gross national product.

The last one is the most recent and the broadest measure of national output. In addition to that part of output accruing to factors of production (national income) the gross national product includes the value of indirect taxes and the dollar value of depreciation and other capital consumption allowances, both of which are conventionally deducted from output in measuring national income.

Because gross product measures the total market value of goods and services produced by the economy, it is the most inclusive measure available for national economic output. It can be classified in terms of the composition of output (goods, services or construction), or in terms of the kinds of expenditures by which the output is acquired (consumption purchases, government purchases, investment purchases, and net foreign purchases), or in terms of the various categories of income and other non-income flows through which the value of output is distributed among government, capital, and labor.

Unfortunately, important segments of the basic data required for computing state or metropolitan gross product are simply not available. However, about 83 per cent of gross national output flows to factors of production in the form of national income. Thus, national income can be satisfactorily used as an alternative measure of output, and is so used in the national accounts of several countries. Official data on national income by regions have not been compiled, but these can be estimated on the basis of available evidence.[7]

The total flow of wage and salary payrolls, which account for about 68 per cent of total national income or 56 per cent of total

7. The concept of national income is similar but not identical to the concept of *value added* as measured in the Census of Manufactures. *Value added by manufacture* is obtained by subtracting "the cost of materials, supplies, containers, fuel, purchased electricity, and contract work" from the value of products. National income originating in manufacturing is a more *net* concept of value added, in that it deducts depreciation and other capital consumption charges and indirect business taxes in addition to the items mentioned above.

gross output, provides the third and least inclusive measure of output. However, reliable data on payrolls are available in considerable detail on a state basis and can be accurately estimated for metropolitan areas. In the absence of other information on the value of output, payroll data can provide an incomplete, but statistically reliable, basis for analyzing the output of small areas. In addition, payroll data can be used in conjunction with other pieces of economic evidence to provide reasonable estimates of total national income originating in local economic activity. Such an estimate for national income originating in Chicago is used in this study as the principal measure of metropolitan output.

There are two minor differences between the output concept developed for Chicago and the official measure of national income for the United States. For comparative purposes the national data have been adjusted to conform with the metropolitan estimates. One difference is that the output (income) of persons employed in the armed forces is not included, i.e., the output measure refers to *civilian income produced.* The second difference is a definitional one. The national accounts define national income as payments accruing to factors of production *owned by* residents of the United States. Thus, it includes the net flow of property income (interest and dividends) to U.S. residents on account of net property rights owned by them outside the United States. The metropolitan estimates count only income generated by production facilities *located* in the area, regardless of the location of ownership. For purposes of statistical comparability both the definition and measure of civilian national income have been amended to conform to the latter concept. Regional output and national output, as measured and used in the study, will refer to civilian income produced by factors located in Chicago and the continental United States respectively.

Saving. There are two measures for saving, both of which are available for the nation as a whole, but neither of which has been calculated for regions.

Personal savings, as computed by the Department of Commerce, is the difference between disposable personal income (personal income after federal and state income taxes) and personal consumption expenditures (excluding net purchases of resi-

dential construction). Alternatively, saving can be measured as the net increase in the stock of real and financial assets owned by individuals.

Both approaches are possible for metropolitan areas and both types of estimates have been made for selected years. The former approach—personal saving—is subject to relatively big errors because it is computed as the difference between income and expenditure, both of which are large relative to the difference between them. The alternative approach although less subject to this type of error is not complete, in that local evidence is not available for several forms of asset accumulation—notably of personal accumulation of marketable securities and the increase of personal equity of owners in unincorporated businesses. However, taken together each saving measure does provide a reasonable check on the broad accuracy of the other.

Basic Economic Data on Chicago. The tables which follow show the major metropolitan series used in this study.

Table 3. Population, civilian labor force and employment. (Census basis.)

Table 4. Wage and salary employees, by industry groups. (BLS basis.)

Table 5. Wage and salary employees, by manufacturing sub-groups. (BLS basis.)

Table 6. Civilian wages and salaries, by industry groups.

Table 7. Wages and salaries, by manufacturing sub-groups.

Table 8. Civilian income produced, by industrial origin.

Table 9. Civilian income produced, by distributive share.

Table 10. Personal income received, by type.

Table 3
Population, Civilian Labor Force, and Employment in CMA, 1940, 1946-58
(Thousands)

Year	Population*	Civilian Labor Force	CIVILIAN EMPLOYMENT			UNEMPLOYED
			Total	Agri-cultural	Nonagri-cultural	
1940	4,825.5	2,271.4	1,967.4	25.0	1,942.4	304.0
1946	5,088.1	2,465.4	2,347.5	21.8	2,325.7	117.9
1947	5,218.1	2,617.9	2,535.6	21.6	2,514.0	82.3
1948	5,366.5	2,687.1	2,604.2	21.6	2,582.6	82.9
1949	5,457.4	2,680.3	2,533.0	20.8	2,512.2	147.3
1950	5,515.0	2,729.7	2,605.1	21.1	2,584.0	124.6
1951	5,575.1	2,718.2	2,647.6	19.2	2,628.4	70.6
1952	5,651.9	2,735.2	2,668.7	19.1	2,649.6	66.5
1953	5,737.1	2,800.3	2,746.2	18.5	2,727.7	54.1
1954	5,861.3	2,833.5	2,678.5	17.9	2,660.6	155.0
1955	5,997.2	2,855.7	2,745.1	17.7	2,727.4	110.6
1956	6,141.2	2,911.3	2,838.5	17.1	2,821.4	72.8
1957	6,277.4	2,923.7	2,829.6	17.4	2,812.2	94.1
1958†	6,390.0	2,941.5	2,719.5	17.0	2,702.5	222.0

*Population data for 1940 are as of census enumeration date. All other years are July 1 estimates.
†Preliminary.
These employment series are comparable with Bureau of the Census estimates of national labor force and employment published in Current Population Series, P-50.
Source: Technical Appendix.

Table 4
Employees in Nonagricultural Establishments, by Industry, 1940, 1946-58
(Thousands)

	1940	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Total Nonagricultural employees	1,760.4	2,173.6	2,336.8	2,365.7	2,273.7	2334.2	2,445.4	2,475.7	2,568.4	2475.7	2,544.8	2,622.7	2,626.6	2,477.6
Mining	3.0	4.1	4.9	5.3	4.9	3.7	3.9	4.1	4.0	3.6	3.5	3.6	3.7	3.8
Contract Construction	45.1	60.9	79.4	91.0	92.5	91.8	103.7	103.5	107.9	107.5	116.2	131.8	132.4	124.5
Manufacturing	683.5	930.2	991.0	975.7	894.6	947.9	1,003.9	1,004.8	1,067.3	977.8	999.6	1,028.9	1,016.6	902.2
Trade	416.6	441.8	473.3	486.2	479.3	477.1	494.8	511.6	525.0	522.4	532.7	545.1	548.7	530.5
Wholesale	120.0	127.4	135.5	143.5	140.6	143.8	150.7	161.9	167.8	169.9	174.0	178.3	179.0	175.4
Retail	296.6	314.4	337.8	342.7	338.7	333.3	344.1	349.7	357.2	352.5	358.7	366.8	369.7	355.1
Transportation*	138.7	180.4	190.6	168.0	158.7	162.3	168.2	164.1	165.6	156.7	161.8	162.9	160.7	148.9
Communication and Public Utilities	49.9	55.6	57.9	61.6	63.1	61.2	64.4	58.2	59.7	60.7	61.4	62.9	62.1	59.1
Finance, Insurance, and Real Estate	113.0	111.9	112.7	117.0	115.5	116.0	120.1	133.0	136.1	140.5	141.8	143.5	145.3	144.8
Services and Miscellaneous	204.6	240.7	255.0	261.0	262.7	270.5	276.0	277.8	283.3	286.7	303.0	316.5	326.5	328.4
Civilian Government†	106.0	148.0	172.0	199.9	202.4	203.7	210.4	218.6	219.5	219.8	224.8	227.5	230.6	235.3
Federal†	—	—	—	67.0	69.0	67.2	75.3	78.7	76.0	71.8	70.3	68.4	67.4	65.6
State and Local	—	—	—	132.9	133.4	136.5	135.1	139.9	143.5	148.0	154.5	159.1	163.2	169.6

*Local streetcar and bus-lines transferred to State and Local Government in 1948.
†Excludes military personnel.
These data are conceptually identical with the national series, "Employees in Nonagricultural Establishments," published by the United States Department of Labor.

Table 5

Employees in Manufacturing Industries in CMA, 1940, 1946-58

(Thousands)

	1940	*1946*	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*	*1958*
Total Manufacturing	683.5	930.2	991.0	975.7	894.5	947.9	1,003.9	1,004.8	1,067.3	977.8	999.6	1,028.8	1,016.6	902.2
Durable Goods	393.6	596.8	634.7	621.1	551.5	604.0	652.3	662.5	718.7	640.9	663.9	694.0	690.6	597.2
Nondurable Goods	289.9	333.4	356.3	354.6	343.0	343.9	351.6	342.3	348.6	336.9	335.8	334.8	325.9	305.0
Food and Kindred Products	96.4	105.1	113.9	109.9	110.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Tobacco Manufactures	1.1	0.6	0.7	0.7	0.7	111.3	112.2	109.2	108.9	105.9	103.7	101.4	96.4	89.0
Textile Mill Products	10.7	9.1	9.4	10.3	9.0	9.3	9.6	9.5	8.3	7.5	8.0	8.1	7.4	6.5
Apparel and Related Products	46.1	47.9	50.7	51.7	48.8	47.3	46.9	44.5	43.9	39.6	39.0	37.4	36.2	33.5
Lumber and Furniture Products*	29.8	34.1	35.4	34.7	31.7	34.5	36.1	32.6	34.1	32.2	33.4	33.3	32.4	30.0
Lumber and Wood Products	—	—	8.8	9.2	8.1	8.6	8.9	8.5	9.2	8.7	9.3	9.3	9.2	8.5
Furniture and Fixtures	—	—	26.6	25.5	23.6	25.9	27.2	24.1	24.9	23.5	24.1	24.0	23.2	21.5
Pulp, Paper, and Products	17.4	22.6	23.4	24.1	23.0	23.8	25.3	24.3	25.8	25.2	25.6	25.9	24.8	23.0
Printing and Publishing	63.6	78.6	84.9	83.4	82.6	80.2	81.2	80.2	83.0	83.3	83.1	85.4	85.9	82.7
Chemicals and Products*	25.1	35.5	36.7	37.8	34.5	36.0	38.8	40.0	43.0	40.9	40.2	40.9	40.6	38.7
Petroleum and Coal Products*	13.0	17.7	19.7	20.6	19.2	18.8	20.6	18.3	18.9	18.9	19.3	19.1	19.3	18.0
Rubber Products	3.5	3.0	3.3	3.8	3.6	4.4	4.7	4.8	5.0	4.6	5.5	5.2	4.4	3.5
Leather and Leather Goods	13.0	13.3	13.6	12.3	10.8	12.1	11.6	10.8	11.2	10.2	10.8	10.8	10.3	9.5
Stone, Clay, and Glass Products	13.8	17.2	18.2	21.5	18.3	19.0	20.0	19.1	19.8	18.5	19.5	20.0	20.5	18.9
Metals, Metal Products and Miscellaneous Products*	200.4	276.1	280.2	284.7	250.2	282.9	302.3	291.9	317.5	288.2	305.6	313.0	315.3	277.6
Primary Metal Industries	—	—	124.0	128.0	112.4	128.8	139.3	129.1	143.4	127.7	135.9	137.3	140.0	121.1
Fabricated Metal Products†	—	—	94.5	93.0	81.1	92.9	97.9	97.8	105.0	96.7	103.9	107.6	109.9	96.5
Instruments and Related Products	—	—	24.4	21.8	20.1	20.7	23.5	24.3	25.4	24.4	24.7	26.1	25.5	24.0
Miscellaneous Manufactures	—	—	37.3	41.9	36.6	40.5	41.6	40.7	43.7	39.4	41.1	42.0	39.9	36.0
Machinery, except Electrical*	67.7	114.9	129.4	124.2	109.9	112.5	131.2	138.3	143.1	131.8	133.6	142.3	136.0	115.2
Electrical Machinery*	60.2	115.1	124.6	114.2	99.0	111.7	114.5	126.6	141.6	123.1	127.6	139.2	140.3	124.7
Transportation Equipment*	21.7	39.4	46.9	41.8	42.4	43.4	48.2	54.0	62.6	47.0	44.1	46.2	46.0	30.9

*Due to reclassification of the industries in the 1947 Census of Manufactures, data for 1940 and 1946 are not comparable to those for 1947-1958.

†Includes ordnance.

These data are conceptually identical with the national series, "Employees in Manufacturing Establishments," published by the United States Department of Labor.

Table 6

Civilian Wages and Salaries, by Industry, CMA, 1940, 1946-57

(Millions of dollars)

	1940	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
Total	3,062.9	6,109.2	7,075.2	7,841.1	7,734.2	8,270.3	9,414.5	9,893.9	10,764.7	10,453.7	11,370.3	12,194.7	12,898.2
Total Non-Farm	3,059.3	6,096.4	7,061.0	7,824.8	7,719.4	8,256.3	9,399.5	9,879.8	10,751.3	10,440.0	11,356.7	12,181.3	12,883.9
Mining	5.6	14.8	19.5	22.2	20.6	15.9	17.1	18.6	19.5	19.4	19.6	21.1	23.2
Contract Construction	98.6	227.6	302.8	364.5	383.2	403.3	499.2	523.5	575.9	586.3	662.7	797.7	715.5
Manufacturing	1,142.1	2,701.1	3,125.7	3,418.6	3,192.2	3,490.8	4,091.2	4,287.3	4,849.9	4,411.9	4,808.9	5,154.0	5,520.0
Trade	627.4	1,160.3	1,349.6	1,521.1	1,545.8	1,584.5	1,730.3	1,807.1	1,917.9	1,983.8	2,110.1	2,248.9	2,420.7
Wholesale	265.3	455.6	509.9	584.9	577.5	596.3	672.5	729.7	795.9	819.8	882.3	951.2	1,014.0
Retail	362.1	704.7	839.7	936.2	968.3	988.2	1,057.8	1,077.4	1,122.0	1,164.0	1,227.8	1,297.7	1,406.7
Transportation*	267.2	579.8	652.6	613.8	609.4	641.9	713.1	721.7	749.0	714.6	767.1	817.1	820.7
Communication and Public Utilities	109.1	175.6	189.4	221.1	234.2	246.6	276.2	271.2	284.4	300.8	318.9	343.7	344.3
Finance, Insurance, and Real Estate	210.3	299.0	316.7	359.6	371.4	406.4	441.5	516.9	546.7	597.2	632.0	664.6	697.6
Services and Miscellaneous	356.1	565.1	651.0	730.7	750.8	819.5	877.9	919.7	982.2	950.6	1,104.8	1,175.4	1,302.3
Civilian Government†	242.9	373.1	453.7	573.2	611.8	647.4	753.0	813.8	825.8	875.4	932.6	958.8	1,039.6
Federal†	—	—	—	197.8	213.5	222.8	271.1	310.4	288.4	284.6	290.6	281.4	288.0
State and Local	—	—	—	375.4	398.3	424.6	481.9	503.4	537.4	590.8	642.0	677.4	751.6
Farm	3.6	12.8	14.2	16.3	14.8	14.0	15.0	14.1	13.4	13.7	13.6	13.4	14.3

*Local streetcar and bus-lines transferred to State and Local Government in 1948.

†Excludes military personnel. 1940 data include wages and salaries of persons on work relief.

These data are comparable with the national series, "Wages and Salaries, by Industry," published by the United States Department of Commerce.

Table 7

Wages and Salaries in Manufacturing Industries, CMA, 1940, 1946-57

(Millions of dollars)

	1940	*1946*	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
Total Manufacturing	1,142.1	2,701.1	3,125.7	3,418.6	3,192.2	3,490.8	4,091.2	4,287.3	4,849.9	4,411.9	4,808.9	5,154.0	5,520.0
Durable Goods	660.4	1,712.0	2,005.3	2,181.4	1,977.6	2,232.1	2,747.8	2,887.6	3,331.7	2,925.4	3,245.5	3,532.6	3,807.8
Nondurable Goods	481.7	989.1	1,120.4	1,237.2	1,214.6	1,258.7	1,343.4	1,399.7	1,518.2	1,486.5	1,563.4	1,621.4	1,712.2
Food and Kindred Products	153.8	306.1	346.4	385.0	390.2	393.2	405.3	435.9	460.6	453.4	476.2	478.1	488.3
Tobacco Manufactures	0.9	1.1	1.4	1.7	1.8	1.8	1.8	2.0	2.0	2.1	2.3	2.6	2.1
Textile Mill Products	12.9	22.8	25.4	31.6	27.6	32.3	33.3	34.7	33.3	29.1	31.5	33.1	34.4
Apparel and Related Products	52.3	121.4	136.2	141.9	136.3	132.5	135.4	133.2	142.3	126.1	125.1	125.8	130.7
Lumber and Furniture Products*	36.4	85.9	110.6	114.3	108.5	122.2	131.8	129.7	138.3	132.8	142.4	144.7	150.9
Lumber and Wood Products	—	—	—	30.6	29.1	31.0	32.3	32.7	35.5	35.2	38.0	40.0	40.8
Furniture and Fixtures	—	—	—	83.7	79.4	91.2	99.5	97.0	102.8	97.6	104.4	104.7	110.1
Pulp, Paper, and Products	29.0	58.5	65.5	76.5	75.6	83.2	92.1	95.4	106.6	105.0	111.6	118.6	123.2
Printing and Publishing	133.8	264.7	308.4	333.6	334.2	345.8	370.6	378.8	417.2	422.1	438.3	466.4	512.7
Chemicals and Products*	52.9	112.9	118.0	134.0	126.2	136.2	156.4	176.1	200.8	196.0	203.2	218.8	231.5
Petroleum and Coal Products*	24.8	57.6	69.8	83.4	78.4	81.2	94.4	88.1	94.6	96.6	109.9	113.3	124.9
Rubber Products	5.5	8.1	10.1	11.7	11.3	14.1	15.2	16.9	19.2	18.1	22.6	21.4	19.3
Leather and Leather Goods	15.8	35.9	39.2	37.8	33.0	38.4	38.9	38.6	41.6	38.0	42.7	43.3	45.1
Stone, Clay, and Glass Products	18.5	46.1	53.0	66.8	64.4	66.7	77.8	78.3	85.1	80.6	94.6	100.8	98.3
Metals, Metal Products and Miscellaneous*	324.9	772.6	893.6	1,012.3	901.8	1,076.8	1,265.9	1,264.5	1,504.8	1,313.2	1,521.0	1,602.0	1,809.8
Primary Metal Industries	—	—	—	475.5	418.0	511.3	629.2	586.4	737.4	610.8	743.6	761.1	860.6
Fabricated Metal Products†	—	—	—	345.7	303.0	365.2	397.6	418.6	478.3	444.5	500.7	538.0	614.8
Instruments and Related Products	—	—	—	67.4	66.8	70.6	93.1	101.9	108.8	102.0	107.7	123.4	130.5
Miscellaneous Manufactures	—	—	—	123.7	114.0	129.7	146.0	157.6	180.3	155.9	169.0	179.5	203.9
Machinery, except Electrical*	127.7	357.8	417.7	462.6	410.6	424.4	598.2	644.6	697.1	647.0	687.5	766.9	774.1
Electrical Machinery*	114.6	332.9	380.5	367.6	332.4	379.7	457.2	516.6	591.2	519.4	567.9	659.7	707.1
Transportation Equipment*	38.3	116.7	149.9	157.8	159.9	162.3	216.9	253.9	315.2	232.4	232.1	258.5	267.6

*Due to reclassification of these industries in the 1947 Census of Manufactures, data for 1940 and 1946-1947 are not comparable to those for 1948-1957.
†Includes ordnance.
These data are comparable with the national series, "Wages and Salaries, in Manufacturing Industries," published by the United States Department of Commerce.

Table 8

Civilian Income Produced, by Industry Group, CMA, 1940, 1946-57

(Millions of dollars)

	1940	*1946*	*1947*	*1948*	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*
Agriculture	17.3	51.5	52.3	82.7	55.1	59.8	75.5	71.5	68.3	74.5	64.1	76.4	74.9
Mining	8.2	18.4	28.1	34.6	30.5	25.0	26.6	27.6	28.5	27.7	29.4	30.9	33.9
Contract Construction	149.0	336.8	436.9	525.5	570.3	583.4	691.1	715.3	783.0	819.3	917.6	1,062.2	1,008.9
Manufacturing	1,639.3	3,507.5	4,250.9	4,860.0	4,541.2	5,244.5	6,163.3	6,070.5	6,722.8	5,984.0	6,756.0	7,173.4	7,689.2
Trade	996.4	2,040.9	2,203.1	2,496.3	2,442.4	2,519.7	2,762.7	2,849.6	2,895.5	2,952.7	3,147.0	3,258.3	3,409.1
Finance, Insurance and Real Estate	562.6	841.7	872.8	1,023.5	1,124.6	1,224.8	1,298.6	1,483.9	1,596.3	1,715.4	1,775.8	1,776.1	2,003.4
Transportation	367.9	696.7	827.8	796.6	778.0	862.3	937.7	939.3	962.3	884.1	970.4	1,019.5	1,016.1
Communication and Public Utilities	217.0	297.1	294.6	341.8	380.8	419.6	487.1	484.6	510.4	547.2	588.6	633.7	639.1
Services	597.9	933.7	1,040.8	1,180.7	1,215.6	1,320.7	1,412.6	1,465.2	1,583.9	1,540.1	1,758.6	1,857.7	2,168.4
Civilian Government	252.7	409.6	487.4	601.5	654.6	683.3	788.9	851.5	860.5	913.1	980.3	1,015.6	1,109.1
Total	4,808.3	9,133.9	10,494.7	11,943.2	11,793.1	12,943.1	14,644.1	14,959.0	16,011.5	15,458.1	16,987.8	17,903.8	19,152.1

Table 9
Civilian Income Produced, by Distributive Share, CMA, 1940, 1946-57
(Millions of dollars)

Year	Total	Wages and Salaries	Supplements to Wages and Salaries	Net Interest	Rent	Business Income
1940	4,808.3	3,062.9	146.8	224.1	156.0	1,218.5
1946	9,133.9	6,109.2	283.0	99.4	286.0	2,356.3
1947	10,494.7	7,075.2	320.6	151.7	308.0	2,639.2
1948	11,943.2	7,841.1	323.4	173.0	355.0	3,250.7
1949	11,793.1	7,734.2	367.1	198.1	403.0	3,090.7
1950	12,943.1	8,270.3	442.0	222.8	437.0	3,571.0
1951	14,644.1	9,414.5	540.1	255.1	456.0	3,978.4
1952	14,959.0	9,893.9	554.5	276.3	490.0	3,744.3
1953	16,011.5	10,764.7	633.5	326.1	511.0	3,776.2
1954	15,458.1	10,453.7	634.3	371.0	536.0	3,463.1
1955	16,987.8	11,370.3	706.1	407.9	521.0	3,982.5
1956	17,903.8	12,194.7	775.4	455.1	519.0	3,959.6
1957*	19,152.1	12,898.2	910.2	467.8	565.0	4,310.9

*New series, not strictly comparable with estimates for 1940-56.

Table 10
Civilian Personal Income, CMA, 1940, 1946-57
(Millions of dollars)

	1940	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957*
Civilian Wage and Salary Disbursements	3,062.9	6,109.2	7,075.2	7,841.1	7,734.2	8,270.3	9,414.5	9,893.9	10,764.7	10,453.7	11,370.3	12,194.7	12,898.2
Other Labor Income	39.0	108.0	141.0	161.0	177.0	222.0	276.0	299.0	340.0	345.0	377.0	405.0	486.4
Proprietors' Income	471.5	1,053.9	973.9	1,100.2	1,054.2	1,110.7	1,216.3	1,243.3	1,244.2	1,241.0	1,302.0	1,345.6	1,497.1
Farm	12.5	37.9	37.3	64.9	38.9	44.1	58.4	55.0	52.3	57.7	47.5	59.0	56.9
Non-Farm	459.0	1,016.0	936.6	1,035.3	1,015.3	1,066.6	1,157.9	1,188.3	1,191.9	1,183.3	1,254.5	1,286.6	1,440.2
Property Income	677.0	1,046.0	1,179.0	1,307.0	1,379.0	1,598.0	1,657.0	1,678.0	1,820.0	1,868.0	1,947.0	2,073.0	2,222.5
Transfer Payments	132.0	410.0	450.0	468.0	423.0	475.0	416.0	414.0	475.0	556.0	578.0	598.0	708.0
Less — Personal Contributions to Social Insurance	37.0	92.0	105.0	109.0	112.0	143.0	161.0	178.0	186.0	220.0	249.0	277.0	322.7
Total Civilian Personal Income	4,345.4	8,635.1	9,714.1	10,768.3	10,655.4	11,533.0	12,818.8	13,350.2	14,457.9	14,243.7	15,325.3	16,339.3	17,489.5

*New series, not strictly comparable with estimates for 1940-56.

Chapter 3

THE LEVEL OF EMPLOYMENT AND OUTPUT

One purpose of regional economic analysis is to examine an area's structure and dimensions as a producer of goods and services. The material wealth of any area ultimately depends on the size and quality of the productive resources it commands, the rate at which these resources are utilized, and the manner in which they are organized to produce goods and services both for the area's own use and for sale in surrounding markets. The task of analysis is to bring these three aspects of productive capacity into focus by providing apropriate measurements for each and by interpreting their mutual interaction.

As a producer of goods and services the Chicago area is considerably larger than is indicated by its share in total U.S. population. Total output of the area, measured in terms of civilian income produced, was over 19 billion dollars in 1957. This was 5.45 per cent of the corresponding measure of total national output. Since Chicago's share of total U.S. population was 3.68 per cent in 1957, output per capita in Chicago was some 48 per cent higher than the national average. For the post-war period as a whole per capita output in Chicago has exceeded national per capita output by about 50 per cent. Annual estimates of the absolute size and relative share of the area's output and population are shown in Tables 11 and 12. Table 13 shows the relation between per capita output in Chicago and the nation. The remainder of this chapter examines the reasons for the 50-point differential in output per capita between the two economies.

Table 11
Civilian Income Produced, CMA and U.S., 1940, 1946-57

(Millions of dollars)

Year	CMA	U.S.*	CMA Share in U.S. (Per cent)
1940	4,808.3	80,691	5.96
1946	9,133.9	170,417	5.36
1947	10,494.7	191,924	5.47
1948	11,943.2	216,399	5.52
1949	11,793.1	210,564	5.60
1950	12,943.1	233,412	5.55
1951	14,644.1	268,394	5.46
1952	14,959.0	277,756	5.39
1953	16,011.5	289,868	5.52
1954	15,458.1	286,743	5.39
1955	16,987.8	311,764	5.45
1956	17,903.8	331,282	5.40
1957	19,152.1	351,381	5.45
1946-57 (Average)	—	—	5.46

Sources: U.S. Department of Commerce, Office of Business Economics, *National Income Supplement*, 1954 ed., and *Survey of Current Business*, July 1957, July 1958; and Technical Appendix to this study.
*Excludes compensation of military personnel and net property income originating outside Continental U.S.

Table 12
Resident Population in CMA and U.S., 1930, 1940, 1946-57

(Thousands)

Year*	CMA	U.S.†	CMA Share in U.S. (Per cent)
1930	4,675.9	122,775	3.809
1940	4,825.5	131,669	3.665
1946	5,088.1	140,638	3.618
1947	5,218.1	143,665	3.632
1948	5,366.5	146,093	3.673
1949	5,457.4	148,665	3.671
1950	5,515.0	151,234	3.647
1951	5,575.1	153,384	4.635
1952	5,651.9	155,761	4.629
1953	5,737.1	158,313	3.624
1954	5,861.3	161,191	3.636
1955	5,997.2	164,303	3.650
1956	6,141.2	167,259	3.672
1957	6,277.4	170,333	3.685
1946-57 (Average)	—	—	3.648

Sources: U.S. Bureau of the Census, *Statistical Abstract of the United States, 1958*, and Technical Appendix.
*Figures for 1930 and 1940 are as of census dates. All other years are July 1 estimates.
†Continental U.S. only. Excludes armed forces overseas.

Table 13
Per Capita Civilian Output, CMA and U.S., 1940, 1946-57
(Dollars)

Year	CMA	U.S.	CMA/U.S. (Per cent)
1940	996	613	162.5
1946	1,795	1,212	148.1
1947	2,011	1,336	150.5
1948	2,225	1,481	150.2
1949	2,161	1,416	152.6
1950	2,347	1,543	152.1
1951	2,627	1,750	150.1
1952	2,647	1,783	148.5
1953	2,791	1,831	152.4
1954	2,637	1,779	148.2
1955	2,833	1,897	149.3
1956	2,915	1,981	147.1
1957	3,051	2,063	147.9
1946-57 (Average)	—	—	149.7

Source: Tables 11 and 12.

Table 14
Factors Contributing to Higher Per Capita Output in CMA, 1940, 1946-57

Year	Total Per Capita Output Differential	CONTRIBUTING FACTORS: Agricultural Factor	Employment Participation Rate	Advantageous Industry Mix	Higher Output per Worker
1940	162.5	115.4	113.0	108.5	114.8
1946	148.1	105.8	117.4	106.1	112.4
1947	150.5	105.5	120.3	106.4	111.4
1948	150.2	104.4	119.4	106.3	113.3
1949	152.6	107.2	117.5	106.4	113.8
1950	152.1	105.9	119.2	106.0	113.7
1951	150.1	104.5	119.4	106.8	112.6
1952	148.5	104.7	120.0	106.7	110.8
1953	152.4	105.0	121.8	107.1	111.3
1954	148.2	105.3	120.3	106.6	109.8
1955	149.3	106.1	119.0	106.7	110.8
1956	147.1	105.9	119.0	106.2	109.9
1957	147.9	105.5	118.1	106.5	111.4
1946-57 (Average)	149.7	105.5	119.3	106.5	111.7

Source: Tables 3, 11-13.

REASONS FOR OUTPUT DIFFERENTIAL

The per capita output differential between Chicago and the U.S. is the joint result of four sets of factors. The relative contribution of each of these factors is shown in Table 14.

The Agricultural Factor. One obvious cause is that agriculture, which has a lower output per person employed, plays a considerably smaller role in Chicago's urban economy. This fact alone accounts for about 5.5 percentage points of the 50-point differential in Chicago's output per capita.

Employment Participation. Less obvious than the first factor but by far the most important reason for a higher per capita output in Chicago is the significantly higher rate at which Chicago's population participates in employment. Over the post-war decade this accounts for 19 percentage points of the overall 50 percentage point differential in per capita output.

Advantageous Industry-Mix. Quite apart from the farm/non-farm differential Chicago enjoys an advantageous industrial mix of employment relative to the nation. Chicago's non-farm employment is concentrated more heavily than U.S. non-farm employment in the relatively high-output industries, e.g., durable goods manufacturing, wholesale trade, and finance. Higher output due to this advantageous composition of non-farm employment accounts for 7 percentage points of the overall 50-point differential.

Higher Output Per Worker. Within any given industry the dollar value of output per worker in Chicago runs somewhat higher than that of the average U.S. worker in corresponding industries. This accounts for about 11 percentage points of the overall 50-point differential.

Interaction. The remaining 7.5 percentage points of the overall differential is due to the interaction of the four factors enumerated above. As Table 14 shows, total differential is the *product* rather than the *sum* of the four contributing elements.

THE AGRICULTURAL FACTOR

The value of output per person employed in agriculture is much lower than the average output of non-farm workers. For the

U.S. as a whole national income produced per person employed in agriculture has varied between one-half and two-thirds of the output per person in nonagricultural employment. Although the proportion of total U.S. employment engaged in agriculture has declined from 20 per cent in 1940 to under 10 per cent in 1957, it is substantially higher than the almost negligible proportion engaged in agriculture in the Chicago area. Even if the Chicago economy were like the U.S. in all other respects this agricultural factor alone would result in a higher average output per capita in Chicago than in the nation.

The effect of this factor on national per capita output can be isolated quite simply by comparing actual U.S. output against what this output would have been if the U.S. had the same small proportion of employment engaged in agriculture as exists in Chicago. In 1940, 20 per cent of U.S. employment was agricultural, and the dollar value of agricultural output per worker was very low relative to nonagricultural. Removing the effect of the agricultural factor in 1940 would have made hypothetical U.S. output 15 per cent higher than it actually was. In 1946, the effect was much lower. This is due partly to the fall in agricultural employment from 20 per cent to 15 per cent and partly to the higher value of farm products which existed after the war. Since 1946, the average effect of the agricultural factor on U.S. per capita output has been running around 5.5 per cent.

The relative constancy of this effect around the 5.5 per cent level is a result of two conflicting tendencies. The continuing decline in the proportion of agricultural employment in the U.S. economy has tended to lower the effect of the agricultural factor on Chicago's relative output per capita. This effect has been offset, however, by a widening differential between the dollar value of output per worker in nonagriculture relative to agriculture.[1]

EMPLOYMENT PARTICIPATION

The per capita output of a region is strongly influenced by the percentage of its population which is engaged in economic

1. Gross *physical* output per man hour in agriculture has been rising rapidly, but net *dollar* output (income produced) per worker in agriculture has not been rising as fast as net dollar output per worker outside agriculture.

activity. During the post-war decade 46.86 per cent of total Chicago population was actively employed as compared with 39.28 per cent of total U.S. population. This factor alone would have made Chicago per capita 19.3 per cent higher than the U.S. average even if the two economies were identical in all other respects.

The higher average ratio of employment to population in Chicago can be traced to a number of factors. These are: (a) a larger concentration of population in the economically active age groups—namely those between 14 and 65 years of age; (b) a higher rate of participation of the active age groups in the labor force; and (c) a higher average of the labor force actually employed.

Age Structure. A larger part of Chicago's population is in the 14-65 age group than is true in the nation. (See Table 15.) In other words, Chicago's share in the economically active population is about 7 per cent higher than its share in total population. This relative concentration of Chicago's population in the active age-groups is due to the tendency of retired people to emigrate from Chicago, to the fact that the flow of immigrants is concentrated in these age groups, and to the somewhat lower birth rates prevailing in Chicago.

Table 15
Distribution of Population by Age Groups, CMA and U.S., 1940, 1950, 1955
(Per cent of total)

	1940		1950		1955	
Age Group	CMA	U.S.	CMA	U.S.	CMA	U.S.
Below 14	19.0	23.2	22.0	25.9	26.1	29.7
14-64	75.2	70.0	70.6	66.0	65.6	61.7
65 and over	5.8	6.8	7.4	8.1	8.3	8.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: 1940 and 1950, *U.S. Census of Population.* Estimates for 1955 are from: *Current Population Reports,* Series P-25, and Donald J. Bogue, *An Estimate of Metropolitan Chicago's Future Population: 1955 to 1965* (Chicago: The Chicago Community Inventory, University of Chicago, February 2, 1955.)

The overall composition of population is changing rapidly both in the U.S. and in Chicago, and in the process, Chicago's population appears to be moving closer to the U.S. structure. As a result the differential between Chicago's share in the active population and its share in total population has gradually dimin-

ished from 7.5 per cent in 1940 to 6.3 per cent in 1955. What will happen in the future to Chicago's age composition relative to the nation is hard to predict because the size and structure of future migrations between Chicago and the rest of the nation are not known. Recent trends, illustrated in Table 16, indicate that the relative concentration of Chicago's population in the active age groups will continue to diminish, although it is unlikely that it will disappear entirely.

Table 16
Total Resident Population by Age, CMA as Per Cent of U.S., 1940, 1950, 1955

Age	1955	1950	1940
All ages	3.65	3.65	3.66
Less than 14	3.39	3.15	3.00
14-19	3.01	3.00	3.20
20-34	3.54	3.83	3.94
35-44	4.06	4.07	4.28
45-54	4.07	4.17	4.38
55-64	4.24	4.19	3.74
65 and over	3.56	3.29	3.12

Source: See Table 15.

Participation Rates. In addition to having a higher percentage of its population in the active age groups, the participation of these groups in the labor force is higher in Chicago than in the nation. The only explicit evidence on participation rates by age and sex are those given in the decennial censuses of population. As Table 17 shows, the percentage of Chicago's population in the labor force in 1950 was higher for both sexes and for all age groups with the exception of males between 14 and 19 years of

Table 17
Labor Force Participation Rates, by Sex and Age, CMA and U.S., 1950
(Per cent of population in labor force)

	MALES		FEMALES	
Age Group	CMA	U.S.	CMA	U.S.
14-19	38.6	43.4	30.0	22.6
20-34	88.9	84.2	42.6	35.4
35-44	94.6	91.9	39.9	34.9
45-54	93.3	89.9	37.0	32.9
55-64	87.0	81.7	27.3	23.4
65 and over	44.6	41.0	9.2	7.8
Total 14 and over	82.6	77.7	38.6	29.0

Source: *U.S. Census of Population, 1950.*

age. For all males 14 years of age and older, the participation rate in Chicago was 6.3 per cent higher than the national average. For females it was 33.4 per cent higher—a reflection no doubt of the greater employment opportunities available to women in the large metropolitan centers. For both sexes combined, the participation rate in Chicago averaged 9.5 per cent higher than in the U.S. A similar situation existed in 1940.

Labor Force and Population. The joint result of the two factors described above—age structure and participation rates—is that the ratio of civilian labor force to total population is considerably higher in Chicago than in the nation. This is also true for most large metropolitan areas, all of which tend to attract people in the working age groups and all of which offer more employment opportunities for women. However, as the census data in Table 18 show, the overall ratio of labor force to population is exceptionally high in Chicago relative even to the other large metropolitan areas.

Table 18
Proportion of Population in Labor Force, 1950, Large Metropolitan Areas

Area	*Per cent*
Chicago	44.9
Cleveland	44.0
New York	43.8
Washington, D.C.	43.8
Minneapolis	42.9
Detroit	42.1
St. Louis	41.9
San Francisco	41.8
Los Angeles	41.8
Baltimore	41.6
Philadelphia	41.4
Buffalo	41.2
Boston	40.9
Pittsburgh	38.9
U.S. Average	39.2

Source: *U.S. Census of Population, 1950.*

Tables 19 and 20 show the joint effect of the higher concentration of Chicago's population in the active age groups and of the higher rate at which these groups participated in the labor force. Against its post-war average of 3.65 per cent of total U.S. population, Chicago had 4.34 percent of the nation's labor force.

Table 19
Employment Characteristics, CMA and U.S., 1940, 1946-57

Year	PER CENT OF POPULATION IN CIVILIAN LABOR FORCE			PER CENT OF LABOR FORCE EMPLOYED		
	CMA	U.S.	CMA/U.S.	CMA	U.S.	CMA/U.S.
1940	47.07	42.26	111.4	86.62	85.41	101.4
1946	48.45	40.90	118.5	95.22	96.05	99.1
1947	50.17	41.88	119.8	96.86	96.44	100.4
1948	50.07	42.06	119.0	96.91	96.64	100.3
1949	49.11	41.78	117.5	94.50	94.53	99.9
1950	49.50	41.72	118.7	95.44	95.02	100.4
1951	48.76	41.00	118.9	97.40	97.01	100.4
1952	48.39	40.42	119.7	97.57	97.34	100.2
1953	48.81	40.31	121.1	98.07	97.49	100.6
1954	48.34	40.00	120.9	94.53	94.99	99.5
1955	47.62	40.08	118.8	96.13	95.97	100.2
1956	47.41	40.37	117.4	97.50	96.22	101.3
1957	46.58	39.89	116.8	96.78	95.68	101.2
1946-57 (Average)	48.60	40.87	118.9	96.41	96.12	100.3

Sources: U.S. Bureau of the Census, *Statistical Abstract of the United States, 1958*, and Table 3.

Table 20
Civilian Labor Force and Employment, CMA Share in U.S., 1940, 1946-58

(Per cent of U.S. totals)

Year	Civilian Labor Force	Civilian Employment	Nonagricultural Employment	Unemployment
1940	4.08	4.14	5.11	3.74
1946	4.29	4.25	4.96	5.19
1947	4.35	4.37	5.05	3.84
1948	4.37	4.39	5.02	4.02
1949	4.32	4.31	4.96	4.34
1950	4.33	4.34	4.93	3.97
1951	4.32	4.34	4.87	3.76
1952	4.34	4.35	4.86	3.97
1953	4.39	4.41	4.90	3.38
1954	4.40	4.37	4.86	4.80
1955	4.34	4.34	4.83	4.17
1956	4.31	4.37	4.83	2.85
1957	4.30	4.35	4.78	3.21
1958	4.28	4.25	4.65	4.74
1946-57 (Average)	4.34	4.35	4.90	3.96

Sources: U.S. Bureau of the Census, *Statistical Abstract of the United States, 1958*, and Table 3.

Employment Ratio. A third and relatively minor factor is that the *average* rate of unemployment in Chicago is somewhat lower than in the nation. From 1946 to 1957, employment in Chicago averaged 96.4 per cent of the labor force compared to 96.1 per cent in the U.S. (Table 19.) During prosperous years, the level of basic unemployment in Chicago is lower than it is in the nation. On the other hand, cyclical unemployment in Chicago rises to a higher level than the national average during recession years like 1946, 1949, 1954, and 1958. Excluding these four recession years, Chicago's share in the number of unemployed persons is lower than its share of total employment—3.70 per cent as against 4.34 per cent. In contrast, during the four recession years Chicago's share in unemployment rises above its share in employment to 4.80 per cent of the national total.

INDUSTRY MIX

The higher ratio of employment to population in Chicago and the negligible proportion of this employment engaged in agriculture jointly account for over one-half of Chicago's higher level of per capita output. Through the operation of these two factors alone, per capita output in Chicago would be 126 per cent of the national average. A third factor, which raises Chicago's per capita output a further 6.5 per cent above the U.S. average, is the relatively advantageous industry-mix of nonagricultural employment in Chicago.

The value of output per person employed varies considerably between one industry and another. This is due to differences, between industries, in the quantity and quality of capital used per worker and also to different values which market demand places on the products of various industries and occupations. Because of variations in the latter factor, the relative standing of the various industries with respect to the dollar value of output per person employed is subject to change between one period and another. In spite of such changes, there does exist a clear underlying pat-

tern of relatively higher output per worker in some industry groups and relatively lower output in others. Even if all other factors were similar, an area whose employment is more heavily concentrated in the high-output industries would have a higher output per capita than other areas.

Table 21 shows the relative pattern of dollar output per worker in various industry groups in the U.S. economy in 1956. It also shows the greater relative concentration of Chicago workers in the high-output industries.

With the single exception of the mining industry, the percentage of Chicago's work force engaged in the higher-than-average output industries is larger and the percentage engaged in a lower-than-average output industries is smaller than the corresponding percentage of total U.S. nonagricultural workers engaged in these industries. The overall effect of this advantageous mix of nonagricultural employment, in itself, raised per capita output in Chicago by 6 per cent over the national average in 1956. For the entire post-war period this effect has varied between 6 and 7 per cent.

Table 21
Output per Worker, by Industry, U.S., 1956

Industry Group	*Index of Output Per Worker (U.S. Average)*	*PER CENT OF WORK FORCE IN INDUSTRY*	
		U.S.	*CMA*
All Nonagricultural Industries	100	100.0	100.0
Manufacturing:			
Petroleum, Coal, and Chemicals	210	2.0	2.3
Metal and Metal-working*	134	15.0	24.0
Printing and Publishing	118	1.6	3.2
Food Products	109	2.9	3.8
All Other Manufacturing	94	4.7	5.3
Wholesale Trade	118	5.6	6.6
Retail Trade	78	15.2	13.6
Finance and Insurance†	107	4.3	5.4
Transportation, Communication, and Public Utilities	131	7.7	8.5
Services‡	66	15.8	13.9
Government§	84	13.2	8.5
Mining	137	1.5	0.2
Contract Construction	89	5.5	4.9

*Includes: primary and fabricated metals, nonelectrical and electrical machinery, transportation equipment, instruments and miscellaneous manufactures.

†Excludes rental and interest components of income produced in this industry group.

‡Includes domestic services but excludes interest originating in household debt.

§Excludes military.

Sources: *Survey of Current Business*, July, 1957; *Employment and Earnings*, May, 1959 and Table 4.

HIGHER OUTPUT PER WORKER

A final cause of Chicago's higher output per capita is that each worker in any given industry produces a relatively larger dollar output of goods and services than national workers in that industry. This factor is independent of, and in addition to, the effect contributed by the relative concentration of Chicago's work force in the high-output industries.

The overall impact of this final factor cannot be computed directly. The estimates shown in Table 14 are derived as a residual between the total output differential and the differential caused by the other factors for which data are available. These estimates indicate that the higher level of dollar productivity per worker in Chicago raised the area's output by about 11 per cent over the national average during the post-war period.

Table 22
Man-hours Worked per Production Worker in Manufacturing Industries, CMA and U.S., 1956

Industry Group	*CMA*	*U.S.*	*CMA as Per Cent of U.S.*
All Industries, Average	2,020	1,987	101.66
Durable Goods Industries	2,035	2,012	101.14
Nondurable Goods Industries	1,986	1,953	101.69
Food and Kindred Products	2,094	2,038	102.75
Textile Mill Products	1,945	1,974	98.53
Apparel and Related Products	1,761	1,791	98.32
Lumber and Wood Products	1,882	1,881	100.05
Furniture and Fixtures	2,121	2,023	104.84
Pulp, Paper, and Products	2,076	2,130	97.46
Printing and Publishing	1,950	1,931	100.98
Chemicals and Products	1,996	2,020	98.81
Petroleum and Coal Products	2,006	1,989	100.85
Leather and Leather Goods	1,975	1,845	107.05
Stone, Clay, and Glass Products	2,073	2,024	102.42
Primary Metals Industries	1,974	1,979	99.75
Fabricated Metal Products	2,069	2,013	102.78
Machinery, except Electrical	2,080	2,077	100.14
Electrical Machinery	2,001	1,982	100.96
Transportation Equipment	2,090	2,061	101.41
Instruments	2,031	2,019	100.59
Miscellaneous Manufactures	2,019	1,971	102.43
Other*	1,991	1,928	103.27

Source: U. S. Bureau of the Census, *Annual Survey of Manufactures, 1956.*
*Includes tobacco and rubber.

What makes per-worker productivity in any given industry higher in Chicago than in the nation? Is this factor real or does it simply reflect the higher level of wages and prices prevailing in the Chicago area? These questions cannot be answered with precision because man-hour productivity data are not available for most industries. But there are a number of clues which provide some indication of where the true answer lies.

Average Annual Hours Per Worker. Longer hours of work per worker could be a reason for higher output per worker in Chicago. The most specific data on man-hours, by industry, are those published in the Manufacturing Censuses and the Annual Survey of Manufacturers. However, these data cover only the manufacturing sector of employment. The statistics in Table 22 show that man-hours worked per production worker in Chicago are somewhat higher than the national average for most industry groups in manufacturing. In 1956, the average production-worker in manufacturing worked 2,020 hours in Chicago as against 1,987 hours in the nation as a whole—a difference of about 1.5 per cent.

Data on average weekly hours in manufacturing are also prepared by the Illinois Department of Labor and the U.S. Bureau of Labor Statistics. As Table 23 shows, these data also indicate a somewhat greater input of hours per worker in Chicago for most years. However, there are numerous disparities between Census data and BLS data on man-hours and the two sources frequently disagree.[2] For example, BLS data for 1956 on average weekly hours in Chicago show these shorter than the national average whereas Census data for 1956 show the opposite.

In view of these statistical discrepancies and of the fact that differences between local and national man-hours per worker are relatively small in any case, man-hours cannot be regarded as a major element in the 11 per cent output-per-worker differential between Chicago industries and similar U.S. industries.

Value Added Per Man-Hour. If man-hours per worker in Chicago do not differ significantly from man-hours in U.S. industries, the cause of per-worker output differences must lie in higher

2. This is due in part to different concepts used by the two agencies. Man-hour figures issued by the Census measure actual hours of work put in over the course of a quarter. Those published by the BLS cover all hours paid for, whether or not worked, and relate only to the payroll period ending nearest to middle of the month.

Table 23
Average Weekly Hours in Manufacturing Industries, CMA and U.S., 1953, 1954, 1956
(Yearly averages)

	1953		1954		1956	
	U.S.	CMA	U.S.	CMA	U.S.	CMA
All Industries	40.5	41.3	39.7	39.8	41.0	40.4
Durable Goods	41.3	41.9	40.2	40.1	41.6	41.1
Nondurable Goods	39.5	40.0	39.0	39.2	39.9	39.5
Food and Kindred Products	41.2	40.9	41.0	40.6	40.8	41.0
Tobacco Manufactures	38.2	38.2	37.7	38.7	38.2	38.9
Textile Mill Products	39.1	42.1	38.3	40.1	40.2	39.7
Apparel and Related Products	36.4	36.5	35.6	35.2	37.3	36.3
Lumber and Wood	40.7	41.3	40.6	41.3	40.8	40.3
Furniture and Fixtures	41.0	41.7	40.1	40.7	41.3	40.8
Paper and Products	43.0	42.0	42.3	40.8	42.0	42.8
Printing and Publishing	38.9	39.0	38.4	37.9	38.4	38.8
Chemicals	41.3	41.0	41.1	40.5	41.4	41.3
Petroleum and Coal	40.8	41.2	40.8	40.6	41.5	41.1
Rubber	40.3	41.9	39.7	40.1	39.7	40.2
Leather	37.7	40.5	36.9	39.2	40.0	37.6
Stone, Clay, and Glass	40.9	40.8	40.6	40.4	40.8	41.1
Primary Metals	40.9	42.1	38.7	38.7	41.7	40.9
Fabricated Metals	41.7	42.4	40.7	41.2	42.0	41.2
Machinery	42.3	42.3	40.6	40.6	42.3	42.2
Electrical Machinery	40.8	40.7	39.8	39.8	41.1	40.8
Transportation Equipment	41.2	43.0	40.5	40.4	41.3	41.0
Instruments	41.4	41.6	40.0	39.8	40.4	40.8
Miscellaneous	40.8	41.8	39.9	40.3	41.6	40.3

Sources: U.S. Bureau of Labor Statistics, *Employment and Earnings*, June, 1956; *Monthly Labor Review*, May, 1958; Illinois State Employment Service, Division of Unemployment Compensation, *Employment, Hours, and Earnings, in Chicago Metropolitan Area*, periodically.

productivity per man-hour in Chicago establishments relative to average U.S. establishments in similar industries. Productivity measured by value-added per man-hour or by national income produced per man-hour can result either from higher physical output per man-hour or from higher prices per unit of physical output. These two separate effects can be segregated only when output consists of tangible goods. Furthermore, because the market for goods is reasonably uniform throughout the nation, factory prices are also reasonably uniform, and most differences in value added per man-hour can be traced to real differences in man-hour output. However, in the case of service-producing in-

dustries, output cannot be measured except in dollar terms. Since there are wide differences in the price of services from one area to another, higher dollar output per service worker is generally a simple reflection of higher prices. Whether the higher dollar value of output per service worker prevailing in Chicago really means anything is a difficult question to which no really satisfactory answer is possible.

As far as goods-production is concerned, there is considerable evidence that man-hour output in Chicago is markedly higher than in the nation for most industry groups. Table 24 gives Census data on value-added per man-hour in manufacturing in Chicago relative to the nation for three recent years. For most sub-groups, Chicago workers produce a higher dollar output per man-hour of

Table 24
Value-Added by Manufacture per Man-Hour, CMA as per cent of U.S., 1954, 1955, and 1956

	1956	*1955*	*1954*
Total, All Industries	114.14	115.36	115.80
Durable Goods Industries	109.08	109.76	109.98
Nondurable Goods Industries	127.79	126.46	127.86
Food and Kindred Products	113.93	114.87	108.47
Textile Mill Products	166.03	170.70	159.30
Apparel and Related Products	122.37	124.55	129.17
Lumber and Wood Products	133.98	126.83	126.33
Furniture and Fixtures	112.53	116.87	118.71
Pulp, Paper, and Products	89.14	94.13	93.01
Printing and Publishing	102.21	103.26	100.52
Chemicals and Products	109.58	107.66	114.54
Petroleum and Coal Products	81.06	83.48	94.77
Leather and Leather Goods	128.92	130.23	128.35
Stone, Clay, and Glass Products	106.49	102.26	108.33
Primary Metals Industries	105.84	105.67	114.07
Fabricated Metals Products	102.58	104.76	104.15
Machinery, except Electrical	109.96	108.17	104.39
Electrical Machinery	96.18	99.35	96.64
Transportation Equipment	119.26	127.12	122.20
Instruments and Related Products	107.68	108.25	98.63
Miscellaneous Manufactures	104.13	99.95	101.26
Other*	85.74	84.50	95.44

Source: U. S. Bureau of the Census, *Census of Manufactures, 1954*, and *Annual Survey of Manufactures, 1955 and 1956*.

*Includes tobacco and rubber.

labor input than do their U.S. counterparts. The notable exceptions to this general rule are petroleum and coal production and electrical machinery production. Averaging all manufacturing industries, man-hour output in Chicago measured in terms of value-added runs about 15 per cent higher than the national average. Since Chicago's average differential output per workers for all forms of employment is about 11 per cent, it follows that the output of non-manufacturing workers in Chicago is also higher than the national average, but the differential is smaller than in the case of manufacturing workers. A crude estimate of the per-worker output differential outside of manufacturing can be derived. This differential shows that per-worker output in non-manufacturing employment is about 8 per cent higher in Chicago than in the nation.

The 15 per cent differential in man-hour output in the manufacturing sector is due to a combination of factors which cannot be segregated statistically. In theory, the contributing factors can be classified into four sets of possible advantages. These are (1) more and better capital per worker; (2) a larger scale of production per establishment which permits internal economies associated with the efficient use of capital, organization, and indirect labor; (3) a larger-scale of total industrial production in the area as a whole—which permits external economies of scale associated with the transportation of raw materials and finished products, the availability of water, fuel, and power, and the existence of highly specialized industrial services; and (4) higher average skills per worker.

Undoubtedly all four of these factors contribute to the higher man-hour output enjoyed by industry in Chicago, but there is no way of evaluating each factor separately. The external economies available to manufacturing industry in the Chicago area can be enumerated, but their precise effect cannot be measured. In the important metal-working sector, which alone accounts for a quarter of total Chicago output, substantial external economies probably exist as the result of industrial size alone. Chicago's central position within the network of all forms of transportation also contributes tangible external economies to plants located in the area.

As far as internal economies are concerned the only available evidence of differential advantages is the relative size of individual establishments in Chicago as compared to the nation as a whole. Virtually every manufacturing industry in Chicago has a larger proportion of its work-force in that industry concentrated in large establishments[3] than is true in the nation.

The final element which possibly contributes to higher man-hour output is the skill and diligence of individual workers. This cannot be measured independently. The average person in Chicago does have more years of schooling than the average person in the nation (9.9 years as against 9.3) but this is not particularly relevant as a measure of specific industrial skills. In any case, the difference virtually disappears if the rural sector of the U.S. is eliminated. Similarly, the fact that Chicago workers in any given industry earn more than their U.S. counterparts does not necessarily indicate higher individual skills. By and large, higher wages are due to higher total productivity in the area. This could result entirely from more capital per worker and from other external and internal efficiencies which are not related to a differential in worker skills here, as compared to elsewhere. The influence of higher general productivity of operations rather than specific productivity of individual workers is particularly apparent in the case of service industries. In many of these industries, worker skills and real output per man-hour are probably no higher in Chicago than in the nation as a whole. But, because of the higher level of wages paid in Chicago to workers in the goods-producing sector, wages are also generally higher in Chicago in the service-producing sector. In other words, identical services command a higher value in the Chicago market than they do in the average U.S. market. Straightforward illustrations of such differentials can be found in many occupations—for example, barber shop services, baby-sitting, postal services, and domestic services. Real output per man-hour in these activities tend to be identical throughout the nation but compensation levels per man-hour for these services are higher in Chicago. The higher market value commanded by these services show up in the data as higher output per worker.

With regard to economic activity as a whole, the only valid

3. Those with a hundred or more employees.

generalization possible is that higher output per man-hour in Chicago comes partly from higher physical output and partly from the higher economic valuation placed on a given output. Together these two factors make the dollar-value of man-hour output in Chicago industries 11 per cent higher than man-hour output prevailing in corresponding national industries. This accounts for approximately one-fourth of the overall 50-point differential in Chicago's per capita output relative to the nation.

Chapter 4

LONG-TERM ECONOMIC GROWTH

An examination of growth trends is an important aspect of metropolitan economic analysis. Its purpose is to furnish some guide to the future through a study of the past. Although the major portion of this book is concerned with the post-war decade, developments since 1946 and their implications for the future can be properly understood only against the backdrop of long-run movements in Chicago's position within the United States economy.

LONG-RUN TRENDS

When Chicago first appeared in the U.S. Census in 1840, there were 4,500 persons in the city and some 26,000 in what is now the metropolitan area, most of whom were dependent on agriculture. Today the area is a highly industrialized center of nearly 6.5 million people of whom 1 million are employed in manufacturing. During these 120 years, the pace of growth and the mixture of causes determining it have changed continuously. The purpose of this section is to explore this changing growth by isolating its principal components over time. Because long-run historical records are available only for population and manufacturing employment, the bulk of the analysis centers on these two variables.

The rate and composition of Chicago's economic growth in any period is a complex result of numerous forces. One obvious force is the rate at which the nation as a whole is growing. It is

useful to isolate this factor, which is common to all areas in the nation, and to examine local growth entirely in terms of Chicago's *relative* share in the U.S.

Tables 25 and 26 show the long-run movements in Chicago's share in population and manufacturing employment from 1840-

Table 25
CMA Population, Population Share, and Growth Rates, 1840-1957

Year	CMA Population (Thousands)	CMA Share in U.S. Population (Per cent)	Ten-year Growth Rate* CMA (Per cent)	Ten-year Growth Rate* U.S. (Per cent)
1840	26	0.15	—	—
1850	104	0.45	75.3	26.4
1860	246	0.78	57.7	26.2
1870	482	1.25	49.0	18.5
1880	761	1.52	36.7	23.1
1890	1,390	2.21	45.2	20.3
1900	2,093	2.75	33.6	17.2
1910	2,753	2.99	24.0	17.4
1920	3,522	3.33	21.8	13.0
1930	4,676	3.81	24.7	13.9
1940	4,826	3.66	3.1	6.8
1947	5,218	3.63	—	—
1950	5,496	3.65	12.2	12.6
1957	6,278	3.69	16.9	15.7

Source: *U.S. Census of Population*, except for 1947 and 1957 which are estimates prepared for this study. (See Technical Appendix.)

*Decadal growth rates measured as increase relative to *final* year of decade.

Table 26
Index of Manufacturing Employment, CMA, U.S., and CMA Share, 1849-1956 (1929 = 100)

Year	U.S.	CMA	CMA Share in U.S. (Per cent)
1849	9.5	0.2	0.15
1859	12.9	1.1	0.53
1869	20.2	5.5	1.80
1879	26.9	13.5	3.25
1889	40.7	30.6	4.87
1899	50.2	41.3	5.33
1909	72.6	60.7	5.42
1919	101.8	89.9	5.72
1929	100.0	100.0	6.48
1939	95.7	92.5	6.30
1947	145.1	144.5	6.48
1957	159.3	148.1	6.05

Source: U.S. data are derived by linking three separate series: 1849-1899, Census of Manufactures data; 1899-1929, Census of Manufactures data; and 1929-1957, BLS data.

Chicago's share based on: 1849, Manufacturing estimate, *Norris' Chicago Directory for 1847* (Chicago, Greer and Wilson, 1846) p. 7; 1859-1929, on Census of Manufactures data; 1939-1957, on estimates of wage and salary workers prepared for this study. (See Technical Appendix.)

1957. Until 1860, Chicago's population-share grew more rapidly than its manufacturing-share. During the Civil War decade, this was reversed and by 1870 Chicago's share in manufacturing (1.8 per cent) had surpassed its share in population (1.2 per cent). By 1900, Chicago's population had crossed the 2-million mark and its share in manufacturing (5.3 per cent) was almost twice its share in population (2.7 per cent). Between 1900 and 1930 the two series continued to grow, but in this period population-share rose faster than manufacturing-share. Both series reached peaks in 1930—when manufacturing-share was 6.5 per cent and population-share 3.8 per cent. After 1930, both series declined—the manufacturing series falling faster than population. Since 1947 Chicago's share in population, but not in manufacturing, has begun a gradual rise.

What are the factors which account for these changes and how are the two sets of changes related? These questions do not need to be answered in detail—but an understanding of the broad composition of the major forces at work is an essential first step towards understanding probable future developments.

Abstracting from details, the factors influencing Chicago's relative share in population and economic activity, can be summarized as an interaction between two sets of forces—one external and one internal. The external influences consist of four broad movements which have ruled American economic life over the past century. These are:

(1) A steady westward movement of population and industry;

(2) A shift of employment from agriculture into manufacturing, and an associated shift of population from rural to urban areas;

(3) A gradual but consistent trend, especially since 1939, towards an equalization of basic economic structures and per capita income levels between various geographic areas in the country;

(4) Irregular fluctuations in the level of aggregate employment and economic activity in the nation as a whole.

These broad movements have an effect on all areas in the nation—but they do so in varying degree and at different times. Their particular effect on Chicago is a result of "internal" factors

unique to Chicago itself: its location at the hub of transportation routes, its position at the center of the continent, the natural resources of the surrounding region, and the nature of the business and political leadership in the area.

For purposes of analysis it is useful to break Chicago's overall share in national totals into two identifiable components: (a) Chicago's share in the larger region to which it belongs and (b) this region's share in the nation. For such an analytical breakdown, the appropriate regional sector is the East North Central group of states as defined by the Census Bureau—also known as the Great Lakes States in the new "Standard" regional definition suggested by the Department of Commerce—which consists of Illinois, Indiana, Wisconsin, Michigan, and Ohio.

The interaction of these component shares—the region's share in the nation and Chicago's share in the region—provide one easy way of isolating the major trends which move people and industry relatively toward, or away from, Chicago as an economic center. Viewed thus, the 120 years from 1840-1957 fall into four conveniently equal periods. The general characteristics of these four periods are shown in Table 27. During the first period, all four elements in the Table—the regional share of national totals and the metropolitan share of regional totals, both for population and manufacturing activity, were operating in Chicago's favor and Chicago grew very much faster than the nation.

In the second period, one of the expansive elements—the region's share in total population—had ceased to operate and in fact declined somewhat. As far as the East North Central region is concerned, relative net in-migration, caused by the broad westward movement of population in the U.S., ceased by 1870. Chicago continued to grow relative to the region but the pace of population growth relative to the nation had lessened.

In the third period, 1900—1930, two of the original expansive movements had ceased to operate—and Chicago's relative growth both in population and manufacturing, though still positive, had slowed considerably. Under "normal" circumstances all four expansive elements would have fallen to zero sometime during the 1930s and regional and metropolitan growth in all probability would have paralleled the trend in national growth. However,

because the depression had a particularly heavy impact on output in the large manufacturing centers, Chicago's share in the region, both in population and manufacturing activity, declined after 1930 and the area entered a period of decline relative to the overall economy.

One interesting feature revealed by the data in Table 27 is that there is no simple relationship between changes in regional population factors and changes in regional manufacturing activity —either statistically or causally. Urbanization as such and the rise of manufacturing activity appear to be related to one another, but only loosely.

Table 27
Population and Manufacturing Employment, Components of Change in CMA Share, 1840-1957

	SHARE OF ENC REGION IN U.S.		*SHARE OF CMA IN ENC REGION*		*SHARE OF CMA IN U.S.*	
*Year**	*Population*	*Manufacturing*	*Population*	*Manufacturing*	*Population*	*Manufacturing*
1840	17.1	—	0.9	—	0.15	—
1870	23.7	18.8	5.3	9.6	1.25	1.80
1900	21.0	23.2	13.1	23.0	2.75	5.33
1930	20.6	29.1	18.5	22.6	3.81	6.58
1957	20.6	28.5	17.9	21.5	3.69	6.12
Change during Period†						
1840-1870	+	+	+	+	+	+
1870-1900	—	+	+	+	+	+
1900-1930	0	+	+	0	+	+
1930-1957	0	0	—	—	—	—

*Manufacturing data refer to Manufactures Census years 1869, 1899, 1929, and latest survey year, 1956. The manufacturing employment data shown in the table for 1929 and 1956 are based on Census data which differ slightly from BLS data shown in Table 2.

†Plus sign (+) denotes increasing share, minus sign (—) denotes decreasing share and (0) denotes relative constancy.

Source: Same as Table 26.

REGIONAL TRENDS

Trends in the relative movement of population and industry toward the East North Central States has been one of the prime factors influencing Chicago's share in the United States and it is likely that it will continue to be an important element in the future. As such it deserves close attention.

The briefest and most convenient way of analyzing regional

trends in general and in the East North Central Region in particular is to examine the broad inter-regional shifts which have taken place over the past sixty years, in population, manufacturing employment, and in value-added by manufacture. Table 28 presents these data for the East North Central States and the other major census regions in the U.S.

As far as relative population growth is concerned, the long-term westward movement was a positive factor for the East North

Table 28
Population and Manufacturing Activity in U.S., Distribution by Geographic Regions, 1899-1956

		U.S. GEOGRAPHIC REGIONS, AS PER CENT OF U.S. TOTAL								
		New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
	Population*									
	Total (Millions)									
1899	75	7.3	20.3	21.0	13.6	13.7	9.9	8.6	2.2	3.2
1909	90	7.2	21.0	19.9	12.7	13.3	9.2	9.5	2.8	4.4
1919	105	7.0	21.1	20.3	11.9	13.3	8.5	9.7	3.2	5.2
1929	122	6.7	21.3	20.7	10.9	12.9	8.1	9.9	3.0	6.6
1939	131	6.4	21.1	20.2	10.3	13.4	8.2	9.9	3.1	7.3
1947	143	6.3	20.1	20.3	9.4	14.0	7.7	9.7	3.2	9.3
1956	167	5.8	19.3	20.5	9.0	14.4	7.0	9.5	3.7	10.7
	Manufacturing Employment†									
	Total (Millions)									
1899	4.9	17.6	34.1	23.2	5.8	9.5	3.7	2.4	1.0	2.7
1909	7.0	16.0	33.8	23.3	5.9	9.7	3.9	3.0	1.1	3.3
1919	9.8	14.6	31.9	27.0	5.7	8.5	3.5	3.1	1.1	4.6
1929	9.7	12.3	29.8	29.1	5.6	10.1	4.1	3.3	1.1	4.6
1939	9.5	11.8	28.9	28.3	5.2	11.6	4.3	3.5	0.9	5.5
1947	14.3	10.3	27.6	30.2	5.5	10.7	4.4	3.9	1.0	6.4
1956	17.2	8.8	26.2	28.5	5.8	11.2	4.6	4.6	1.3	9.0
	Value Added by Manufacture†									
	Total (Millions of Dollars)									
1899	4.6	15.6	36.5	25.0	6.7	6.5	3.1	2.1	1.6	2.9
1909	8.2	14.0	35.0	25.5	6.6	6.9	3.4	2.9	1.6	4.1
1919	23.8	12.9	33.7	28.5	5.6	7.4	2.7	2.9	1.2	5.1
1929	30.6	10.2	31.9	31.3	5.9	7.7	2.9	3.0	1.1	6.0
1939	24.5	9.9	29.8	31.6	5.5	9.1	3.4	3.3	1.1	6.3
1947	74.3	9.2	28.0	31.6	5.5	9.3	3.9	4.1	1.1	7.4
1956	139.7	7.5	25.0	31.2	5.9	9.5	4.1	5.3	1.5	10.0

*Census of Population and Current Population Reports.
†Census of Manufactures and Annual Survey of Manufactures, 1956.

Central Region only until 1870. Since 1900, the share of this region in total U.S. population has been remarkably constant. While there have been large movements of population within the U.S. since 1900 and extremely rapid percentage increases in certain regions over the past sixty years, these have had almost no net effect as far as the East North Central Region is concerned. However, they have led to a gradual but steady change in the basic pattern of population distribution in the nation as a whole. The share of population in the West and Southwest states, for example, grew from 14 per cent in 1899 to 24 per cent in 1956. The share of New England, West North Central, and East South Central States fell from 31 per cent to 22 per cent. The share of the two most populous regions, the Middle Atlantic and the East North Central States, changed relatively little.

The shift in manufacturing activity, measured either in terms of employment or in terms of value added by manufacture, has been somewhat greater than the shift in population. The share of the oldest industrial regions in the nation, New England and the Middle Atlantic States, which contributed 52 per cent to total value added by manufactures in 1899, declined steadily to 32 per cent in 1956. The share of all other areas increased correspondingly. The share of the East North Central States increased fairly rapidly up to 1929 and then stabilized. Since 1929, the less industrialized areas have grown the most, particularly during the post-war decade. This trend too is likely to continue.

Will the stability of the East North Central States in population and manufacturing activity continue in the future or will the gradual equalization of regional industrial structures with regional population structures begin to draw industry from this Region as it has already done from the northeastern seaboard? If so, will this lead to a decline in the share of population of the East North Central Region? Trend analysis alone cannot provide an answer to these questions, but it does provide useful guides on which an answer can be based, especially when it is supplemented by an analysis of the factors which underlie the location of industrial expansion.

Where industry locates new facilities depends upon a combination of causes—some identifiable and some not. One factor is

access to raw materials. Access, in an economic sense, can be either physical proximity or access via economical transportation. A second factor is access to adequate labor supply—in terms both of scale and quality. This can be satisfied either by locating close to the required sources of man-power or by attracting it to the selected location. A third factor is ease of access to major markets —through proximity or convenient transportation. In addition there are other factors such as the availability of financing and, finally, sporadic "accidental" factors such as personal preferences and biases. The relative importance of these factors varies considerably from industry to industry. Some industries are dominated by the raw material factor, others by the market factor, and still others by additional considerations.

Regional shifts in the location of industrial expansion, taken as a whole, depend not only upon a region's relative attractiveness with respect to specific industries, but also on the industrial composition of the total expansion which is taking place within the national economy. When the bulk of national industrial expansion is occurring within industries which are raw material oriented, the pattern of regional distribution will be influenced accordingly. In contrast, population and market considerations appear to be dominant during periods in which the industrial composition of expansion favors the market-oriented industries. Population distribution as such, is only one determining factor within a complex of causes, and its relative influence on industrial distribution is subject to considerable variation from one period to another. This relationship is made even more complex by the fact that population itself frequently shifts in response to existing industrial structures—although the long-run trend suggests that the basic flow of causation runs from population to industrial expansion.

Table 29 isolates the statistical relations over time between population distribution, on the one hand, and industrial distribution, on the other. This relation, known as the Regional Index of Industrialization, expresses manufacturing employment per thousand of population, for each region, relative to the corresponding ratio for the nation as a whole.

The behavior of these "indexes of industrialization" shows the wide differences which exist between regions and the long-run

Table 29
Regional Indexes of Industrialization, 1899-1956*

Year	Average U.S. Manufacturing Employment per 1,000 Population	RATIO OF REGIONAL MANUFACTURING EMPLOYMENT PER 1,000 POPULATION TO U.S. AVERAGE								
		New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
1899	64	2.52	1.76	1.15	.45	.73	.39	.29	.45	.86
1909	78	2.37	1.69	1.24	.49	.77	.45	.34	.43	.78
1919	94	2.20	1.62	1.42	.52	.69	.44	.34	.40	.95
1929	79	1.93	1.46	1.48	.54	.80	.53	.36	.41	.87
1939	73	1.83	1.37	1.40	.50	.87	.53	.35	.30	.75
1947	100	1.64	1.38	1.49	.59	.76	.58	.40	.31	.68
1956	103	1.51	1.36	1.39	.64	.78	.66	.48	.35	.84

*"Index of Industrialization" consists of the ratio of each region's average manufacturing employment per 1,000 population to the U.S. average.

Source: Table 28.

tendency of these differences to persist in spite of what appear to be strong inter-regional shifts in manufacturing activity. For example, the North East Section of the country—New England, Middle Atlantic and East North Central States—had 75 per cent of all manufacturing employment in 1900 and the industrial index of these three regions taken together was 154 per cent of the national average. In 1947, the share of this Region in industrial employment had fallen to 68 per cent and its index of industrialization had declined to 146 per cent of the national average. For all other areas combined, the index of industrialization rose from 49 per cent of the national average in 1900 to 60 per cent in 1947. Over these 50 years, the relative location of manufacturing did shift in response to population distribution—but the movement was an extremely slow one. The change within the industrial North East Section of the country was far larger: the relative level of industrialization in the East North Central States grew rapidly while a relative decline occurred in the other sections of the North East, especially in New England.

Since 1947, the overall shift in industrialization patterns has been much swifter. The index of industrialization for the three regions with higher than average concentration in manufacturing —which had declined gradually from 154 in 1900 to 146 in 1947— declined fairly rapidly to 139 in 1956. The index for the remainder of the country rose from 60 to 67 per cent of the national average. In other words, the general tendency towards a greater regional

"equalization" of industrial structure, which operated only slowly up to 1947, has quickened during the post-war decade. How fast it will move in the decade ahead and how this move will affect the East North Central Region will depend upon structural changes in the composition of industrial expansion. If the nineteen-sixties bring a shift in emphasis from producers' goods to consumers' goods, the relative shift in industrialization will move even faster than it has. This, in turn, will imply a continued decline in the East North Central Region's Index of Relative Industrialization. The extent of this shift cannot be estimated nor can the effect of such a shift on the region's share in population or total economic activity be assessed on the basis of trend analysis alone. However, historical data provide useful clues to these questions. Lower-than-average industrialization indexes are associated with high regional specialization in the extractive industries. Since such areas will continue to specialize in activities for which they are naturally endowed, complete regional equalization of industrial indexes will probably never occur. This means that regions like the East North Central States will continue to specialize in manufacturing, although the relative degree of specialization will diminish.

The history of the Middle Atlantic Region provides a guide to what such a trend might imply for aggregate economic activity in the East North Central Region. A steady long-run decline in the relative index of industrialization in the Middle Atlantic States has not led to a corresponding decline in their share of population. The development of alternative employment activities has gradually replaced the relative dependence of these states on purely industrial sources of output and income.

A tangible key to the future behavior of regional shares in manufacturing activity is that provided by data on the geographic distribution of capital expenditures by manufacturing establishments. The relation between a region's share in such capital expenditures and its share in total manufacturing output (measured in terms of value-added) is a useful indicator of forthcoming changes in its share of output. These relationships are shown in Table 30. In using these data, however, it must be remembered that capital expenditures per dollar of output varies widely

between one industry and another. This means that the total volume of expenditures reflects not only the overall rate of industrial expansion in a region but its composition as well. In spite of this limitation the data in Table 30 suggest that the regional distribution of capital expenditures does foreshadow regional movements in industrial employment and output. With one or two exceptions, a region's share in value-added by manufacture, has consistently moved toward the proportion indicated by its share in capital expenditures. For the East North Central Region, the share of value-added and the share of capital expenditures have both been remarkably constant since 1939 at around a level of 32 per cent of the national total.

Table 30

Value-Added by Manufactures and New Capital Expenditures in U.S., Distribution by Geographic Regions, 1939-1956

(Per cent of U.S. total)

	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Value-added, 1939	9.9	29.8	31.6	5.5	9.1	3.4	3.3	1.1	6.3
Capital Expenditures, 1939-44	5.5	19.6	31.7	6.9	7.1	6.2	10.6	3.4	9.0
Value-added, 1947	9.2	28.0	31.6	5.5	9.3	3.9	4.1	1.1	7.4
Capital Expenditures†, 1951-56	5.4	20.2	32.5	4.7	11.4	4.8	9.3	2.0	9.6
Value-added, 1956	7.5	25.0	31.2	5.9	9.5	4.1	5.3	1.5	10.0

*Based on *Census of Manufactures, 1939* and War Production Board "The Geographic Distribution of Manufacturing Facilities Expansion: July 1940-May 1944."

Source: *Census of Manufactures* and *Annual Survey of Manufactures.*

The general concentration of industrial activity in the East North Central Region is one important element in Chicago's growth. A second element is the relative tendency for economic activity and population within the region to concentrate in the Chicago area.

Table 27, earlier in this chapter, summarized the long-run changes in Chicago's share within the East North Central States in terms of population and manufacturing employment. Chicago's share in manufacturing within the region grew rapidly to a peak which was reached around 1900. Since 1900, manufacturing activity in Chicago has paralleled that of the region as a whole. In contrast, Chicago's share in regional population continued to expand up to 1930. Since 1930, both population-share and manu-

facturing-share have declined slightly. The nation-wide tendency toward a greater equalization of industrial activity between regions also appears to exist within the East North Central States and it can be analyzed in a similiar fashion.

Since 1939, Chicago's share within the East North Central Region has undergone the changes listed in Table 31. All statistics seem to indicate a gradual tendency toward an equalization of economic activity as between Chicago and the rest of the East North Central Region, and a probable continuation of this tendency in the future.

Table 31
CMA Share in ENC Region, 1939, 1947, 1956
(CMA as per cent of ENC region)

	1939	1947	1956
Population	18.1	18.0	17.9
Manufacturing Employment	22.7	21.9	21.5
Value-added	24.5	23.6	21.7
Capital Expenditures	—	20.6	20.3
Index of Industrialization*	125	122	120

*Relative to the region.

Chapter 5

CHICAGO'S ECONOMIC BASE

THE LAST chapter has shown that although the examination of broad trends in an area's share of national population and unemployment can be a helpful guide toward an understanding of its future, the trends themselves cannot be projected in order to provide a reliable estimate of future levels of metropolitan economic growth and activity.

At the national level, it is possible to approach the problem of projecting future growth in economic activity through an examination of the forces underlying supply capacity. What makes this possible is that projections of the labor force, based on existing population structure, and estimates of death-rates and migration rates, provide a tangible point of departure for the most important factor of supply. For small areas, this approach cannot be adopted because internal migration is a relatively important factor in population and labor-force changes. In the case of Chicago, for example, over 27 per cent of the average annual increase in population during 1950-56 came from net in-migration.[1] Since internal migration is predominantly of economic origin, any estimates of future changes in the labor force in large metropolitan centers must be based upon an analysis of changes in the demand for goods and services in which the local economy specializes. If these demand factors are ignored and the size and direction of future migratory flows is assumed for purposes of analysis, the

1. *Population Growth in the Chicago Metropolitan Area: 1950-57,* p. 5. Because in-migrants are predominantly in the economically productive age group (16-65 years), the annual addition to CMA labor force from this source is even higher than the net annual addition to the resident population. See *Illinois Labor Bulletin,* November-December 1958, pp. 10 ff.

projections will simply reflect the results already implicit in this assumption. Thus, if it is assumed that Chicago will continue to attract a net flow of migration from outside it will follow that Chicago's population is likely to grow faster than the national average and that Chicago's share in national population will rise.

Estimates of other factors of supply are even less relevant in projecting future economic growth for small areas—unless the particular area under question is heavily dependent upon, and built around, some exhaustible natural resource. This is not true of most metropolitan economies, which are predominantly industrial or service type economies rather than extractive or agricultural, and in which the supply of land is limited only by the unwillingness of industries to spread over suburban portions of the area. Finally, the availability of the third important factor of supply—capital—is almost completely independent of local supply conditions because investment funds are even more mobile than labor, and can be expected to flow in from other areas of the nation if there is sufficient growth in demand for the local output of goods and services.

What this means is that it is not possible to approach the problem of metropolitan projection from the supply side of the equation. If it is assumed that Chicago's share in national activity will remain at current levels—as is so frequently done in regional projections—or that these shares will continue to maintain recent trends, estimating the future level of metropolitan activity is simply a matter of applying these assumptions to selected national projections. But if this procedure is justified, the entire problem of regional or metropolitan analysis disappears and so does the need for such analysis, which exists only because regional shares are expected to undergo changes in the future. What is likely to happen to regional shares of national totals is precisely the question which regional analysis seeks to answer, and this question must be approached through the demand side of the economic equation.

If aggregate demand for the particular products in which an area specializes experiences a rise relative to the total national demand for goods and services, then employment, output, and population in the area are also likely to rise relative to the nation.

If such demand falls, an area is likely to experience a net out-migration and a loss in its relative share of employment, output, and income. Viewed thus, the problem of metropolitan economic projection resembles that of company sales projection rather than long-run projections of national economic activity. As such it must proceed by (a) identifying those key products on which the area's economic structure is based and (b) estimating probable levels of future demand for these products.

IDENTIFYING BASIC INDUSTRIES

It is useful to segregate local economic activity into two broad categories: one category consists of production for the local market within the area; the other of specialized production for external markets. A convenient way to describe this dual nature of local production is to classify the former group of industries as "local industries" and the latter group as "export industries." This is the terminology which is used in the present study. However, alternative terminologies have ben used in the literature to describe these two distinct sources of demand for an area's output, and some of these deserve examination.

The industries which produce goods and services marketed primarily outside the local area being analyzed are sometimes referred to as *city-forming industries.* The implication of this term is that such industries provide the basic reason for the existence of cities as centers of economic activity; these industries are also referred to as *basic industries.* The revenues derived from the external sales by these industries are used to finance the imports of goods and services in which the area itself is deficient, or to accumulate credit claims against non-residents.

Local industries, on the other hand, have been called *city-serving industries,* as their main purpose is to provide goods and services for people residing in the locality. Examples of these are neighborhood banks, personal service shops, elementary schools, and a number of similar establishments patronized chiefly by nearby local residents. Such activities have been also called *non-*

basic to differentiate them from the export-oriented industries.[2]

Other descriptive classifications of economic activity within a small area indicating this same general division of a local economy into two categories are: "primary industries" and "supporting industries;" "exchange-production" and "self-production industries;"[3] "sporadic industries" and "ubiquitous industries."[4] The last classification makes reference to the fact that some forms of economic activity represent specialized production located at strategic points distributed sporadically over a wide area, while other forms of economic activity are present in all localities.

The general assumption underlying all these terms is that almost all economic areas are self-sufficient with respect to one set of industries and, at the same time, are highly specialized producers of certain types of output, the bulk of which is marketed in other parts of the nation or the world. The division of activity into these two categories depends on the size of the economic unit being considered. The United States taken as a whole is a relatively self-sufficient economy: the nation commands vast and divergent resources and, as a consequence, exports constitute only a small part of total national output while an equally negligible proportion of total domestic consumption comes through imports from abroad. For smaller regions within the nation, resources are less diversified and hence these economies, taken as units, tend to be more specialized and to export a correspondingly larger share of their output. For most metropolitan areas, the degree of specialization, economic interdependence, and hence the proportion of local output exported, all tend to be substantially higher than is true of national or regional economies.

A necessary first step in the analysis of an individual local economy is the identification of that area's "export" industries. Because there are no direct data on the flow of goods and services

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2. See: I. Ekstedt, G. Jonsson, W. William-Olsson, *Stockholm Inre Differentiering* (Stockholm, 1941), pp. 12 ff; Richard B. Andrews, "Mechanics of the Urban Economic Base: the Problem of Base Measurement," *Land Economics, February*, 1954, pp. 53 ff; Homer Hoyt, "Homer Hoyt on Development of Economic Base Concept," *ibid.*, May, 1954, pp. 182 ff; John W. Alexander, "The Basic-Nonbasic Concept of Urban Economic Functions," *Economic Geography*.

3. L. H. Klaassen, D. H. van Dongen Torman, L. M. Koyck, *Hoofdlijnen van de sociaaleconomische ontwikkeling der gemeente Amersfoort van 1900-1970* (Leiden, 1949).

4. See Gunnar Alexandersson, *The Industrial Structure of American Cities* (Lincoln: University of Nebraska Press, 1956), pp. 13 ff.

between regions in the United States, this identification problem must be approached indirectly. One way of doing so is by comparing the structure of local employment against the structure of national employment.

CHICAGO'S ECONOMIC BASE

Although many variations exist, the problem of identifying an area's basic or export industries consists essentially of a simple comparison between the structure of employment in the area and the structure of employment existing in the nation. The usual point of departure for these methods is to calculate *local employment concentration ratios* for each industry, i.e., the percentage of local population or labor force engaged in a given industry, and to compare these against corresponding national employment concentration ratios. Since the principal purpose of these ratios is to identify how much output an area produces in excess of local requirements in any given local industry, the population basis is the preferable one.[5]

Given certain simplifying assumptions, e.g., that the nation as a whole is relatively self-sufficient, that output per worker in a given area is identical to that in the nation, that consumption per capita is identical between the area and the nation, and that the rate of inventory accumulation is identical in the area and the nation, employment concentration ratios provide a sufficient basis for classifying an area's industries into three broad groups: (a) basic or export industries—those industries in which local concentration ratios are above national concentration ratios, (b) local or residentiary industries—those industries in which local con-

5. For a description and illustrative application of *employment concentration ratios* and *location quotients* see: P. Sargent Florence, *Investment, Location and Size of Plant* (London: Cambridge University Press, 1948), pp. 34-54. Also, George Hildebrand and Arthur Mace, Jr., "The Employment Multiplier in an Expanding Industrial Market: Los Angeles County, 1940-47," *Review of Economics and Statistics*, August 1950, pp. 341-49; Douglas C. North, "Location Theory and Regional Economic Growth," *Journal of Political Economy*, June 1953, pp. 254 ff. Gunnar Alexandersson in *The Industrial Structure of American Cities* suggests that the appropriate comparison should be between the local structure of employment on the one hand and the *typical* structure of national employment on the other hand rather than the *actual* structure of national employment.

centration ratios are similar to national concentration ratios and (c) import industries—those industries in which local concentration ratios are lower than national concentration ratios. The ratio between the local employment concentration ratio for any industry and the corresponding ratio for the nation is generally referred to as the *location quotient* for that industry. Quotients larger than one indicate that the industry in question is an export industry, quotients around one indicate its residentiary or local nature and quotients less than one indicate that the products of the industry in question are probably imported into the area.

This general approach is best illustrated by means of a specific example. In 1956, 1.04 per cent of total United States resident population was employed in the non-electrical machinery industry, i.e., the employment concentration ratio for the United States in the nonelectric machinery industry was 1.04. The corresponding ratio in Chicago was 2.35 per cent. Thus Chicago's location quotient in this industry was 2.245 (2.35/1.04). The nonelectrical machinery industry is thus obviously an export or basic industry in the Chicago economy. Given all the assumptions listed above, it can be inferred that a considerable part of the output of this industry in Chicago is exported. The relative share of total employment in the nonelectrical machinery industry in Chicago attributable to export sales, known as the *export quotient*, can be derived from the employment concentration ratios and the location quotients. In the example cited above, the export quotient is equal to

$$\frac{\text{location quotient} - 1}{\text{location quotient}} = \frac{2.245 - 1}{2.245} = 55.6 \text{ per cent}$$[6]

Although crude, this method provides a reasonable basis of identifying a region's economic base, i.e., the major export industries of an area and the relative dependence of each such industry on export markets. It also provides a framework for observing changes in an area's economic base.

Chicago's economic base has undergone continuous change over the past century. In its early stages Chicago was a trading rather than a manufacturing center. The earliest manufactures

6. Export quotients can also be calculated by applying U.S. concentration ratios to Chicago's population and taking the difference between "normal" employment in an industry and actual employment in that industry in Chicago.

were those closely connected to the agricultural life of the surrounding community. Apart from residentiary manufacturing activity—milling, meatpacking and leather manufacturing were probably the only "export industries" prior to the Civil War. The Civil War and Reconstruction Periods led not only to a rapid increase in Chicago's position in these industries, but also to the emergence of new forms of specialization in manufacturing, notably meatpacking, men's clothing, and agricultural machinery. Chicago's emergence as a major manufacturing center after 1865 was due to a combination of circumstances—the westward expansion of agriculture, the completion of the railroad network around Chicago, the invention of the refrigerated car, and the impact of the war itself on the demand for leather and textile goods. This period also marked the growth of secondary, as opposed to primary, forms of manufacture. In particular the agricultural machinery industry was stimulated by the rapidly growing demands of the increasing farm population of the west and northwest for labor saving devices, and this, in turn, was at least partly due to the diversion of manpower into the armed forces and concurrent increases in the demand for agricultural output.

The growth of metal-fabricating industries in Chicago, the opening of the great iron-ore deposits of the upper Michigan Peninsula, and the availability of coal in Illinois and Indiana led quite naturally to the development of the important steel industry in the Chicago Area. Chicago's position in this industry relative to other steel centers advanced from virtually zero in 1860 to fifteenth rank in the United States ten years later and to fourth rank by 1880.[7]

In spite of these developments in the primary metals and the machinery industries, Chicago's economic base continued to be centered on consumer goods industries—notably meatpacking, men's clothing, and furniture—until the outbreak of World War I. Although the gradualness of the shift makes it impossible to pinpoint changes, World War I marks a watershed in the development of Chicago's economic base. The War accelerated the gradual dispersal of the more primary sectors of manufacturing in which Chicago had specialized prior to 1914 and with this dis-

7. A. T. Andreas, *History of Chicago* (Chicago: A. T. Andreas, 1886).

persal Chicago's position within the men's clothing industry, meat-packing, and furniture began a gradual decline which is still going on. But the war and post-war years also brought about an increase in Chicago's share in the more highly specialized industries such as iron and steel, printing and publishing, and electrical machinery. This shift in emphasis originally associated with World War I developments is still going on.

Chicago's fundamental industrial position as of 1940 and changes which have taken place in this position since that date are shown in Tables 32-34.

Table 32
Employment Concentration Ratios, U.S. and CMA, 1940, 1956*

	U.S.		CMA	
Industry	*1956*	*1940*	*1956*	*1940*
Agriculture	3.94	7.24	.28	.52
Mining	.50	.72	.06	.06
Manufacturing:				
Metals	4.89	3.15	10.56	7.32
Primary Metals	.80	.70	2.26	2.16
Fabricated Metals	.69	.49	1.77	1.02
Machinery	1.04	.65	2.35	1.56
Electrical Machinery	.73	.29	2.29	1.26
Transportation Equipment	1.11	.67	.76	.45
Instruments and Miscellaneous	.51	.36	1.13	.87
All Other Durables	1.10	.98	.88	.91
Food	.94	.93	1.67	2.02
Printing and Publishing	.52	.43	1.41	1.33
Petroleum, Coal, and Chemicals	.66	.47	.99	.80
All Other Nondurables	2.18	2.37	1.45	1.92
Transportation	1.73	1.72	2.71	2.93
Communication and Utilities	.83	.67	1.03	1.04
Wholesale Trade	2.06	1.48	3.02	2.60
Retail Trade	5.77	4.88	6.93	7.13
Finance, Insurance, and Real Estate	1.49	1.19	2.46	2.45
Services	4.39	4.15	5.72	5.08
Government, Civilian	4.35	3.19	3.70	2.20

*Employment Concentration Ratios represent the proportion of the total resident population employed in a given industry. Employment therefore includes all persons working in any industry—wage and salary workers as well as self-employed and unpaid family workers. These totals, derived from Census data, differ from the industry distribution of wage and salary employees. Industries which are considered to be of purely local scope—such as construction and domestic service, are excluded from this table.

Table 32 shows employment concentration ratios in Chicago and in the United States for 1940 and 1956. In Table 33 the relative degree of specialization in Chicago is shown for each industry in terms of location quotients. In both years, the major export

industries in manufacturing are metal-working (excepting transportation equipment); food; printing and publishing; petroleum, coal, chemicals. For all other segments of manufacturing Chicago is a net importer. Outside of manufacturing, the major import segments are agriculture, mining, and government, all of which have location quotients below unity: all other non-manufacturing groups depend in minor and varying degrees on export markets.

Table 33
Employment Location Quotients in CMA, 1940 and 1956

Industry	*1956*	*1940*
Agriculture	.007	.007
Mining	.120	.080
Manufacturing:		
Metals	2.159	2.324
Primary Metals	2.836	3.095
Fabricated Metals	2.581	2.101
Machinery	2.245	2.404
Electrical Machinery	3.134	4.346
Transportation Equipment	.684	.679
Instruments and Miscellaneous	2.206	2.536
All Other Durables	.800	.929
Food	1.776	2.172
Printing and Publishing	2.711	3.093
Petroleum, Coal, and Chemicals	1.500	1.702
All Other Nondurables	.665	.810
Transportation	1.566	1.703
Communication and Utilities	1.241	1.552
Wholesale Trade	1.466	1.757
Retail Trade	1.201	1.461
Finance, Insurance and Real Estate	1.651	2.059
Services	1.303	1.224
Government, Civilian	.851	.690

Sources: Table 32.

The relative degree of specialization in any given industry (as measured by location quotients) is only one dimension of an area's economic base. The absolute contribution of an industry to the total external revenue earned by an area's export activities depends also on the relative size of that industry. Table 34 combines the evidence in Table 33 with the size factor in order to show the absolute importance of the various industries in total export revenue.

Using the simplifying assumptions of equal output per worker and equal consumption of each industry per capita as between

Chicago and the nation, about a third of total employment in Chicago in 1940 was attributable to specialized production for external markets. In terms of absolute size the most important export activity by far was manufacturing (323,000 persons engaged in activity attributable to export markets) with metal fabricating (212,000 persons) as its most important segment. Apart from metal fabricating, the only other exporting manufacturing industries in 1940 were food and kindred products (52,000 persons); printing and publishing (44,000 persons); and petroleum, coal and chemical products (16,000 persons). In addition to being an exporter of manufacturing products, Chicago was also "exporting" retail trade services (109,000 persons), transportation services (59,000 persons), financial and related services (61,000 persons), and wholesale trade services (54,000 persons).

Table 34
Employment Attributable to "Export" Activities in CMA, 1940, 1956
(Thousands)

	Number of Persons		*Per Cent of Total Employment*	
	1956	*1940*	*1956*	*1940*
All "Export" Industries	833.2	667.9	29.4*	33.9*
Manufacturing	490.1	323.4	47.0	46.9
Metals†	370.3	211.8	61.5	63.9
Primary Metals	90.0	70.5	64.7	67.7
Fabricated Metals	66.7	25.9	61.2	52.5
Machinery	79.9	43.9	55.4	58.4
Electrical Machinery	96.0	46.7	68.1	77.1
Instruments and Miscellaneous	37.7	24.8	54.6	58.9
Food	45.0	52.4	42.8	53.8
Printing and Publishing	54.6	43.5	63.1	67.8
Petroleum, Coal, and Chemicals	20.2	15.7	33.3	40.9
Transportation	60.3	58.5	36.2	41.3
Communication and Utilities	12.0	17.7	19.1	35.4
Wholesale Trade	58.7	54.1	31.7	43.1
Retail Trade	71.1	108.7	16.7	31.6
Finance, Insurance, and Real Estate	59.4	60.7	39.4	51.4
Services	81.6	44.8	23.2	18.3

*Percentages for all "export" industries refer to total civilian employment during each year.
†Excludes transportation equipment.
Source: Calculated from Tables 32-33.

Between 1940 and 1956, location quotients for virtually all of Chicago's major export industries experienced a gradual shift downward. As a consequence Chicago's overall dependence on export markets declined from slightly over one-third of total

employment to slightly under 30 per cent. During this period, Chicago's dependence on manufacturing activity as its principal "export industry" increased further, and within manufacturing, metal fabricating (with the exception of transportation equipment) emerged as an even more dominant form of export activity. In 1940, the metal-working group contributed approximately 32 per cent to Chicago's total "exports." In 1956, this sector's contribution had risen to 45 per cent.

The data shown in Table 34 are subject to the important limitations inherent in the assumption that output per worker in Chicago is equal to that in the United States and that consumption per capita of each industry in Chicago is also equal to the national average. In practice neither of these assumptions is correct. While it is not possible to solve the problem of regional differences in output per worker or of consumption per capita of each industry's output, crude adjustments are possible which provide a somewhat more accurate picture of the various industrial components of Chicago's principal export activity. These adjustments are shown in Tables 35 and 36 for the year 1956.

Table 35 compares Chicago's requirements for the output of each industry against actual Chicago output in each industry, both measured in terms of national income produced. The data in Table 35 assumes that Chicago's output requirements for the products of each industry are equal to Chicago's share in the United States population. These can be compared to Chicago's actual output, measured in terms of national income produced, by industry. The difference between the two is a crude measure of Chicago's output balances, i.e., the excess or deficiency of actual output over requirements.

Because Chicago's output requirements in Table 35 assume equal per capita consumption in Chicago and the nation, the regional output balances shown in this Table are seriously overstated. Two types of adjustments are required in order to remove this overstatement: (1) for consumer products and services, some adjustment is required for the higher dollar level of consumption per capita in Chicago relative to the nation and (2) for producers' goods and intermediate products, some adjustment is required for higher local usage of the higher than average levels of local out-

Table 35
CMA Regional Output Balances, 1956

Industry	*U.S. Income Produced Per Capita (Dollars)*	*CMA Output Requirements*	*CMA Actual Output*	*CMA Regional Output Balances*
		(Millions of dollars)		
Total, All Industries	—	10,575.1	16,091.7	5,516.7
Agriculture	96	589.5	76.4	— 513.1
Mining	36	221.1	30.9	— 190.2
Manufacturing	—	3,954.8	7,173.4	3,218.6
Metals	—	2,075.6	4,465.9	2,390.3
Primary Metals	65	399.1	1,158.8	759.7
Fabricated Metals	46	282.5	672.0	389.5
Machinery	73	448.3	1,027.5	579.2
Electrical Machinery	44	270.2	863.1	592.9
Instruments and Miscellaneous	29	178.1	394.1	216.0
Transportation Equipment	81	497.4	350.4	— 147.0
All Other Durables	53	325.5	334.8	9.3
Food	52	319.3	647.0	327.7
Printing and Publishing	31	190.4	585.7	395.3
Petroleum, Coal, and Chemicals	70	429.9	687.3	257.4
All Other Nondurables	100	614.1	452.7	— 161.4
Transportation	100	614.1	1,019.5	405.4
Communication and Utilities	75	460.6	633.7	173.1
Wholesale Trade	116	712.4	1,245.3	532.9
Retail Trade	230	1,412.5	2,013.0	600.5
Finance, Insurance, and Real Estate*	83	509.7	1,257.1	747.4
Services†	164	1,007.2	1,626.8	619.6
Government, Civilian	178	1,093.1	1,015.6	— 77.5

*Excluding rent originating in real estate.
†Excluding interest on consumers debt and income produced by domestic service workers.
Source: *Survey of Current Business*, July 1957, and Technical Appendix.

put. For example, it is obvious that a large proportion of Chicago's "excess" output of primary metals is consumed within the machinery and metal fabricating industries located in Chicago. However, taking the Chicago economy as a whole, these intra-industry uses of local output can be ignored by viewing the metal-fabricating industry as a channel through which Chicago "exports" its excess primary metal production. Viewed thus the only adjustment required is the adjustment for over-all differences in consumer usage of goods and services—and this can be done, though relatively crudely, on the basis of personal consumption data available for Chicago and the nation for 1955 (described in Section H of the Technical Appendix to this volume).

If Chicago's output requirements are raised in order to take

into account Chicago's higher consumption level of goods and services, the regional output balances shown in Table 35 become considerably smaller. These adjusted balances can in turn be converted into total employment attributable to exports, by dividing the dollar balance in each export industry by average dollar output per worker in that industry in Chicago. These adjusted estimates of the composition and size of total Chicago employment attributable to export activity are shown in Table 36.[8]

Table 36
Employment Attributable to Exports in CMA, 1956 Adjusted

Industry		*Per Cent of Total Employment*
Total, All Export Activities	580.6	20.5†
Manufacturing	418.4	—
Metals	313.7	—
Primary Metals	79.5	57.2
Fabricated Metals	52.0	47.7
Machinery	65.9	45.8
Electrical Machinery	86.1	61.1
Instruments and Miscellaneous	30.2	43.8
All Other Durables	*	—
Food	39.7	38.7
Printing and Publishing	51.5	59.6
Petroleum, Coal and Chemicals	22.2	13.6
Transportation	*	—
Communication and Utilities	*	—
Wholesale Trade	53.5	28.9
Retail Trade	54.4	12.8
Finance and Insurance‡	18.8	20.0
Services	35.5	10.1

*Becomes a local industry after adjustment for consumption-differentials.
†Per cent of total civilian employment.
‡Excluding real estate employment which becomes a local industry.
Source: Table 35.

Table 36 suggests that approximately 20 per cent of total employment in Chicago is "export" based. The relative importance of the external share of each industrial market varies from around 10 per cent, in retail trade and service, to around 60 per cent in

8. Adjusted output balances—whether in terms of dollars or employment—should not be taken as a measure of Chicago's balance of trade. The adjustments are altogether too crude for such an interpretation of the figures. The entire purpose of the adjustment is to identify Chicago industries which produce in part for external markets and to assess the relative importance of each of these industries in Chicago's overall economic base.

the case of printing and publishing, electrical machinery, and primary metals.

Table 37 provides a summary picture of Chicago's economic base as of 1956. It lists the industry and sub-industry groups in which the economy specializes and from which it derives the bulk of its "export" income. The Table also measures the relative importance of each of these export activities in terms of three dimensions: (1) its relative importance within the Chicago economy, measured as the share of total wages and salaries contributed by the industry; (2) Chicago's degree of specialization within each activity measured in terms of location quotients; and (3) the contribution of each industrial activity to gross exports originating in the Chicago Area.

Table 37
Chicago's Economic Base, 1956

Export Industries	*Relative Importance within the Economy* (Per cent)*	*Relative Contribution to Export Income† (Per cent)*	*Relative Degree of Local Specialization‡*
Manufacturing	35.2	72.1	—
Metals	24.8	54.0	216
Electrical Machinery	5.4	14.8	313
Primary Metals	6.2	13.7	284
Nonelectrical Machinery	6.3	11.3	225
Fabricated Metals	4.4	9.0	258
Instruments and Miscellaneous	2.5	5.2	221
Printing and Publishing	3.8	8.9	271
Food	3.9	6.8	178
Petroleum, Coal and Chemicals	2.7	2.4	150
Nonmanufacturing	33.5	27.9	—
Wholesale Trade	7.8	9.2	147
Retail Trade	10.6	9.4	120
Finance and Insurance	5.5	3.2	165
Services§	9.6	6.1	130

*Industry's contribution to wage and salary receipts in Chicago.
†Employment attributable to exports of industry relative to total local employment attributable to exports.
‡Measured in terms of industry location quotients. U.S. = 100.
§Excludes domestic services.
Sources: Tables 7, 33, and 36.

Five of the ten major industry groups in Chicago are export activities and among them by far the most important is manufacturing. In manufacturing, specialized export production is concentrated within ten of the twenty manufacturing sub-groups and heavily concentrated in the five metal-working industries—

electrical machinery, nonelectrical machinery, primary metals, fabricated metals and instruments, and miscellaneous products. Together, these five metal-working activities generate one-fourth of all wages and salaries received in the Chicago Area; with the sole exception of printing and publishing, these five represent activities in which the Chicago Area is most highly specialized relative to the nation; and, taken together, these activities provide nearly 55 per cent of Chicago's export receipts.

Other export activities within the manufacturing sector are food, printing and publishing, and petroleum, coal and chemical manufacturing. Of these three the most important is printing and publishing. Like the metal fabricating industries it represents an activity in which Chicago has a high degree of specialization: the activity generates less than 4 per cent of total wages and salaries in the area but it contributes approximately 9 per cent of Chicago's total export income. The food industry though equal in size to printing and publishing as a source of aggregate wages and salaries provides a somewhat smaller portion of Chicago's total export income and represents an activity in which Chicago's relative degree of specialization has been declining.

Unlike manufacturing, the non-manufacturing "export industries" are essentially locally oriented i.e., their contribution to Chicago's export income is approximately in line with their contribution to total wages and salaries. The four industries in this category: wholesale trade; retail trade; financial and insurance services, and the service industries, together account for about a third of total wages and salaries received in the Chicago Area, and for about 28 per cent of Chicago's gross export income.

Chicago's output within the industries and sub-industries not listed in Table 37 are essentially city-serving in nature i.e., the bulk of local output in these industries is consumed locally. Some of these industries, e.g., transportation, contract construction, and communications and public utilities are by nature residentiary, i.e., output in these industries satisfies only local requirements. Others, e.g., agriculture, mining, and federal government services are naturally or institutionally industries for which the Chicago Area must import a large part of its local needs.

The third group of non-basic industries, e.g., textiles, rubber,

and leather manufacturing, are activities in which other manufacturing areas in the nation specialize, and for which Chicago imports a substantial portion of its local requirements.

It is quite possible for Chicago's future growth to take the form of an increasing degree of self-sufficiency within industries which presently belong in the import category. Except in isolated cases this is unlikely to happen, and past trends indicate that, in fact, the opposite development has been taking place—Chicago's degree of self-sufficiency with respect to its "import industries" has been decreasing rather than increasing. Economic growth can also come from an expansion of industries which are essentially residentiary in nature. However the growth of residentiary industries generally depends upon a prior growth of population and income levels in the area. These, in turn, depend essentially on the expansion of activity in the area's basic or "export industries." These characteristic city-forming activities provide the principal basis for the initial expansion of population and employment in any given area and hence for the development of employment opportunities within the non-basic city-serving industries. The "export" revenue earned by these industries is also the principal source of funds by which an area finances the imports of items it cannot or does not produce. Any estimate of Chicago's future growth as an economic center must pay particular attention to the future of these key "export industries" and to their prospects for expansion in Chicago, relative to aggregate national growth.

Chapter 6

FACTORS AFFECTING FUTURE GROWTH

THE CONCLUSION of the last chapter is that the future pace of Chicago's economic growth is closely linked to the prospects for the seven or eight key industries which constitute the core of its economic base. The present chapter examines the factors which influence these prospects.

The biggest single determinant of Chicago's future growth is the level of prosperity and growth in the national economy. In one sense, this statement is a truism; but, in addition to the self-evident connection which exists between the Chicago economy and the American economy as a whole, there are two less obvious ways in which the level of prosperity in the United States affects the Chicago Area. One of these is the fact that high levels of national economic prosperity tend to be associated with high levels of demand for durable goods in general and producers' durable goods in particular. The share of durable goods output within Gross National Product almost always rises during periods of prosperity and declines during periods of generally stagnant demand. Because Chicago's economic base is heavily concentrated within the durable goods sector, Chicago's share within the economy as a whole also tends to rise during periods of prosperity and to decline when national growth slows.

The state of national economic prosperity also affects Chicago's relative share within the nation through its influence on the pattern of internal migration within the United States. High levels of demand and employment tend to be associated with relatively

large movements of population from rural areas to the metropolitan centers; during periods of less than full employment and relatively low demand this movement of population tends to be reversed.

Because of these two factors economic growth in the Chicago Area is doubly sensitive to conditions of national prosperity. National economic prosperity determines not only the total output in which the Chicago Area shares; but, even more importantly, it determines Chicago's share in this output.

The influence of national economic conditions on Chicago's *share* in the U.S. economy accounts for a very large part of the changing pattern of Chicago's growth over the past forty years. The decade of boom in the twenties, like most boom periods, was associated with a relative increase in the demand for durable goods. As a major supplier of such products Chicago enjoyed a larger than average rate of economic growth. During the depressed and stagnant thirties the opposite occurred. Not only did aggregate demand for total output fall, but the share of the durable goods sector within the shirinking total also declined rapidly. As a consequence, Chicago's share within the national economy declined during the thirties and the area suffered a net outflow of migration.

The post-war boom with its heavy emphasis on durable goods has led to a general restoration of Chicago's pre-depression share within the American economy, to a net inflow of migration, and a consequent expansion of the area's share in national population. The future growth of the Chicago Area depends very heavily on whether these trends continue. For example, the influence of migration on Chicago's population growth is illustrated by alternative projections of Chicago's total share in U.S. population prepared by the Chicago Community Inventory of the University of Chicago.[1] The estimates for 1980 range from a low of 3.56 per cent of U.S. population to a high of 4.37 per cent, depending on the rate of in-migration which is assumed. Based on a projected U.S. population of 245 million by 1980, the estimated growth in Chicago's population over the twenty-five year period 1955-1980

1. Chicago Community Inventory, University of Chicago. *Population Study Series*, No. 3 (City of Chicago, Department of City Planning, 1959), p. 25.

is 2,660,000 if it is assumed that current in-migration rates decline; if present migration rates increase, this estimate increases by about 75 per cent to 4,650,000. Which of these two widely differing estimates of growth will be achieved depends to an important degree on future developments in the markets for Chicago's basic industries—durable goods, in general, and durable capital goods, in particular.

The future growth of aggregate national demand for goods and services, in general, and for durable and capital goods, in particular, is only one potential determinant of Chicago's future growth. A second set of determinants is the combination of factors which influences the proportion of aggregate national demand flowing to establishments located in Chicago. Will the Chicago area maintain its present share in the various industrial outputs in which it participates, or will technological and market changes in the next decade result in the disappearance of some portion of its present export activities or the emergence of new sectors of specialization? Specific answers to these questions would require technological and market analysis of each of hundreds of products supplied by activity in the Chicago Area. Such an analysis is beyond the scope of the present study. However, there are a number of overall clues which deserve consideration. In particular, three developments affecting Chicago's share in the economy have attracted attention. These are: (1) the overall tendency observed in the post-war years for a gradual dispersal of manufacturing and other economic activities away from the older metropolitan centers; (2) the potential impact of the opening of the St. Lawrence Waterway on industrial location; and (3) the nature of future regional shifts in industry foreshadowed by recent trends in business capital expenditures.

TRENDS IN REGIONAL INDUSTRIAL STRUCTURES

The process of economic development in the United States over the past 30 years, and particularly since World War II, has

been associated with a gradual but steady shift in the industrial composition of output among the various regions of the nation. Whether measured in terms of employment structure or in terms of the composition of income receipts, the overall tendency has been in the direction of a greater uniformity of industrial structure between various sections of the country. For almost all areas and all industries, regional location quotients have moved in the direction of unity. This trend has been strong and is likely to continue and is therefore of significance for the older manufacturing centers like Chicago.

The steady tendency of most industrial location quotients, for most regions, to move toward unity is a result of a large number of long-range forces at work in the economy. One important factor is the rapid decline of agriculture and mining as a source of income and of employment. In 1940, for example, there were 22 states which derived more than 15 per cent of their total production income from agriculture—in nine of which agriculture provided more than 25 per cent of production income. In 1956, only six states had more than 15 per cent of production income derived from participation in agriculture and only one state had more than one-fourth. The counterpart of this development has been a steady increase, in almost all areas, of manufacturing and services as a source of civilian income and employment. With few exceptions, the largest increases in manufacturing as a source of income have taken place in the previously least industrialized sections of the country. This trend has been accompanied by a gradual tendency for the regional distribution of income to approach the regional distribution of population.[2] Taking manufacturing activity as a whole, the older metropolitan centers (those with 2 per cent or more of total U.S. manufacturing employment in 1939) account for a noticeably smaller share within manufacturing in 1959 than they did in 1939.

The gradual shift in employment structures in individual regions toward the overall structure of employment of the U.S. as a whole cannot of course be expected to result in a complete equalization of employment structures for all regions. Certain

2. For a discussion of these regional shifts see Department of Commerce, *Personal Income by States since 1929.*

forms of productive activity, especially agriculture and mining, will obviously remain concentrated in certain areas of the United States. These industries depend almost entirely on natural resources and are therefore overwhelmingly *production-oriented.* At the other extreme are the *market-oriented* industries such as retail trade, services, construction, transportation, communication and public utilities, and local government—whose location is overwhelmingly determined by proximity to ultimate consumers. Growth in these industries is likely to gravitate toward the regional distribution of population and income. Between these two extremes there is a group of industries—especially manufacturing, wholesale trade, professional and financial services, which are subject to a mixture of gravitational pulls—both of production and of markets. It is within these sectors of activity that future shifts are likely to occur, away from the older centers and toward a pattern of location which lies somewhat closer to the present and future distribution of markets.

As far as manufacturing activity is concerned, two factors influence the speed and extent of the regional redistribution of industrial activity. The closer the stage of fabrication and distribution to the ultimate product purchased by the consumer, the stronger the pull of market forces relative to technological considerations of production. If industrial activity is ranked in terms of these various stages of fabrication, the pattern of optimum location, at one end of the manufacturing spectrum, resembles that of primary production (production-oriented), and, at the other, it resembles that of retail trade and services (market-oriented).

A second factor influencing shifts in the location of manufacturing is the relative complexity of the industrial processes required both in terms of capital equipment requirements and in terms of labor skills. In the early phases of its movement toward industrialization, a region generally engages in the relatively low-capital, low-skill sectors of manufacturing activity. The fact that such industries tend to be low-wage industries relative to manufacturing as a whole also serves to encourage the movement of plants in these industries out of the older manufacturing centers, in which they must compete for labor against relatively

high-wage forms of manufacturing, toward the newer centers in which such competition is not present. The shift of the textile industry from New England to the South, and the steady decline of the men's clothing, furniture, and meat packing industries in the Chicago Area are typical examples of the way in which these economic forces work. The fact that many of the older manufacturing centers have succeeded in maintaining their relative position as manufacturing centers in spite of the out-migration of certain forms of industrial activity which had previously been important within these areas, is due to long-term growth of more specialized types of activity—notably of durable goods—which provide economies of scale in production and which are less subject to the pull of market-oriented forces.

Of the specific industries which comprise Chicago's economic base today, the gradual regional dispersal of income and economic activity over the United States is likely to bring about a continued erosion of Chicago's "export" position in the consumer oriented sectors of export activity, e.g., trade, services, and consumer-goods manufacturing. This erosion has already taken place in such fields as transportation services, men's clothing, and food and furniture production, all of which were at one time significant elements in Chicago's export base. In contrast, the potential erosion of Chicago's economic base is least likely to occur within the production-oriented manufacturing activities such as iron and steel, in which Chicago has become increasingly specialized. The principal threat to these segments of activity lies not so much in the emergence of substitute sources of supply as in declining overall demand for the products manufactured.

The extent to which Chicago's future share in the national economic activity will be affected by the regional redistribution of industrial activity is only partly dependent upon the pull of market forces on industries now present in Chicago. An equally important consideration is the rate at which technological change and business innovation will induce the development of new forms of economic specialization in the area to replace those parts of its present economic base which are lost to other areas. For example, the development of specialized professional services in the Chicago Area could fill the gap left in its economic base by a possible

decline in its present export position in retail trade and non-professional services. Similarly, changes in freight structures brought about by the St. Lawrence Seaway could reverse the long-term decline which has been taking place in Chicago's position as a specialized exporter of wholesale services. Thirdly, investment in new industrial plant and equipment could reinforce Chicago's present production advantages in the activities in which it specializes and thus offset the tendency of market-oriented considerations to draw parts of manufacturing activity to other locations. The first of these possibilities, particularly with respect to Chicago as a center of financial services, is discussed in a later chapter in this book. The second and third factors are discussed below.

THE ST. LAWRENCE SEAWAY

The opening of the St. Lawrence Seaway extends the Atlantic westward into the American continent on a scale which is similar to the eastward extension provided by the Mediterranean. This development is probably the largest single new factor which must be taken into account in analyzing future shifts in the location of economic activity over the next decade. The probable influence of the seaway on the Midwest, in general, and on Chicago, in particular, have already received wide attention both in the literature and in the popular press. The range of opinion on the Seaway's economic effect on the Chicago Area varies considerably. At one extreme, there are those who anticipate that the opening of the Great Lakes to deep-water navigation will have a profound effect on the Chicago Area; at the other extreme, are those who feel that these anticipations grossly exaggerate the probable change which the Seaway will bring about in industrial location patterns.

In evaluating the likely consequences which a new structure of transportation rates will have on the location of future economic activity in the Chicago Area, it is useful to think of the total effect in terms of three components. The first and most obvious effect is

the increase in local employment directly connected with transportation which can be expected to result from a re-routing of present traffic through the port of Chicago. The second effect, which is less direct, consists of the net potential change, particularly in manufacturing activity in the Chicago Area, caused by a fall in transport costs between Chicago and its potential sources of raw materials and markets. Together with the first effect, these induced changes will bring about a change in the size and composition of Chicago's economic base. A tertiary effect, which accompanies any change in an area's economic base, is the potential enlargement of employment in non-basic or city-serving activities which inevitably accompanies a change in basic employment activity.

Of these three effects only the first can be estimated with any degree of confidence. Because of its strategic location as the gateway between the Lakes and a large and prosperous hinterland and because it is already the rail, highway, and inland waterway hub of the Midwest, Chicago is likely to gain a leading share in the increase in water-borne commerce on the Lakes. As such, it is likely to receive a considerable part of the direct traffic-associated employment which the Seaway will divert from Atlantic and Gulf ports.

Chicago's ultimate share in total nation-wide employment directly associated with water-borne commerce, depends primarily on the economic size of the hinterland which it, rather than some other port, is likely to service. The share of this hinterland in national exports and imports varies from commodity to commodity. It is generally agreed that a very high proportion of grain shipments is likely eventually to flow through Chicago and specific estimates for the various grain movements have been developed.[3] As a center of manufacturing activity Chicago is also likely to handle a significant portion of water-borne movements in fabricated products, but traffic estimates for these products are harder to make. The only explicit estimate of the volume of water-borne traffic in nonagricultural products likely to pass through the port of Chicago is provided by a sample survey con-

3. See Joseph R. Hartley, *The Effects of the St. Lawrence Seaway on Grain Movements* (Indiana University Bureau of Business Research, 1957).

ducted by the Chicago Association of Commerce and Industry.[4] The conclusion of this study is that total cargo passing through the port of Chicago is likely to double to approximately three million tons by 1965 and that the flow of general cargo is likely to increase sixfold to approximately 650,000 tons by this date.

Because employment requirements for the different categories of water-borne traffic vary considerably, the conversion of these estimates of Chicago's share in tonnage into an estimate of Chicago's share in employment associated with water-borne traffic is a highly technical problem, and thus far no specific employment estimates have been published. On the basis of extremely crude estimates, the tonnage projections for Chicago appear to imply that Chicago's eventual share in employment associated with water-borne traffic should rise to between 15 and 20 per cent of total national employment in these activities. The only official data on these categories of employment are those contained in the occupational and industry breakdowns provided in the 1950 Census of Population; and even these do not provide a sufficiently detailed cross-classification to permit a specific isolation of the number of shore-based persons employed in water-borne traffic movements. Defined in its narrowest sense, about 60,000 persons were directly engaged in longshore and stevedoring activities in the United States as a whole in 1950. Chicago's probable share in this total thus amounts to between ten and twelve thousand persons. Defined in a somewhat broader sense, the census showed 209,000 persons engaged in the water transportation industry in 1950. Using this total as a base, Chicago's emergence as a deep-water port could lead to a direct increase in local employment of approximately 35,000 persons. Whatever the precise increase, there appears to be little doubt that this aspect of economic activity and employment in Chicago is likely to grow over the coming decade.

Although wide, the range of estimates on the direct employment effect of the Seaway is small relative to the range of estimates which have been put forward with respect to the indirect impact which lower transportation rates will have on Chicago's position

4. Chicago Association of Commerce and Industry, Business Research and Statistics Division, *Export Traffic—Port of Chicago—Projections through 1965* (Chicago, 1959).

as a manufacturing, financial, and trade center. Because transportation cost is only one among many factors influencing the regional location of future economic expansion, and because the relative importance of these various location-determining factors is unknown, there is no way, even in principle, of checking the accuracy of the various opinions which have been expressed on the indirect effect of the Seaway on Chicago's growth as an economic center. The Seaway will reduce freight costs between Chicago and its sources of raw material, and at least one consequence of note is that Chicago's degree of dependence on Lake Superior sources of iron ore will be reduced over the long run. The Seaway also reduces the economic distance between Chicago as a source of output and a broad range of markets here and abroad. However, by the same token, it reduces the economic distance between Chicago-based markets and competing sources of output. The conceptual and measurement problems which must be solved in order to derive a reliable projection of the net effect of these forces is insurmountable because of the almost complete lack of quantitative information on the complex set of factors which determine business decisions on the location of industrial expansion. The only tangible clue which does exist is the recent volume of business investments in plant and facilities in the Chicago Area relative to other localities in the nation.

PLANT AND EQUIPMENT INVESTMENT

The regional distribution of recent and current business investment in plant and equipment facilities is one of the best available clues to future regional patterns of output. Unfortunately, except for the manufacturing sector, local data on plant and equipment expenditures by business are notably inadequate.

Three types of business investment data are available for the Chicago metropolitan area. One series, prepared by the Chicago Association of Commerce and Industry, is a compilation of expansion plans publicly announced by industries located in the area.

Although this series is available on a continuous monthly basis for the postwar period, its usefulness is negated by the fact that no corresponding data exist for other regions or for the nation as a whole. Chicago data refer to announced plans, and include the value of land as well as the value of existing structures acquired. Its principal virtue is that it provides a break-down of the total by sub-areas within Chicago and by broad industrial groups within manufacturing. However, noncomparability with national totals precludes the use of this series as an indicator of changes in Chicago's future share in productive capacity.

A second and perhaps the best known series on industrial expansion in Chicago is that compiled by the Territorial Information Department of the Commonwealth Edison Company. These data measure large contracts awarded for the construction of industrial plants in the Chicago Metropolitan Area and are drawn from contract awards data published by *Engineering News Record.* Comparable data drawn from the same source are available for the United States as a whole, individual states, and selected metropolitan areas. The Commonwealth Edison's compilations include only those contract awards which have an individual value in excess of $100,000, and thus do not include all industrial engineering construction contracts contained in the original *Engineering News Record* compilations.[5]

The third and most inclusive evidence on total plant and equipment expansion within the Chicago Area is contained in the official statistics on manufacturing plant and equipment expenditures provided in the periodic Census of Manufactures and, since 1955, in the Annual Survey of Manufactures published by the U.S. Bureau of the Census.

The coverage of total capital investment provided by the Commonwealth Edison series and the Census plant and equipment data can best be appreciated by comparing these data for the U.S. as a whole against other more inclusive measures of capital formation available for the nation. This is done in Table 38 for the year 1955. Line A of this table shows the most inclu-

5. The minimum cutoff point used for the inclusion of industrial contract awards in the *Engineering News Record* data has varied from $55,000 in 1946-47, to $68,000 in 1948-50, to $82,000 in 1951-54, and to $93,000 in 1955-56.

sive total for gross fixed domestic investment—that used in the Gross National Product accounts prepared by the Department of Commerce. In 1955, this total amounted to over $56 billion.

Table 38
Business Capital Formation, U.S., 1955
(Billions of dollars)

A	Gross Fixed Investment (Commerce basis)	$56.4	
	(1) Residential Construction		16.6
	(2) Farm Construction and Equipment		4.1
	(3) Religious, Educational, Hospital Construction		2.3
B	Gross Non-Farm Producers' Plant and Equipment	33.3	
	(1) Construction		12.1
	(2) Equipment		21.2
C	Business Plant and Equipment (SEC basis)	28.7	
	(1) Non-manufacturing Companies		17.3
	(2) Manufacturing Companies		11.4
D	Plant and Equipment Expenditures (Census basis) Manufacturing Establishments		7.9
E	Private Engineering Contract Awards	10.8	
	(1) Industrial Contracts Only		3.0
	(2) Large Industrial Contracts ($100,000 or more)		1.5

Sources: Line A, B—*Economic Report of the President*, 1958, Table F-8 P. 125.
Line C—Ibid. Table F-30 P. 150.
Line D—Bureau of Census *Annual Survey of Manufactures*, 1955.
Line E (1)—*Engineering News Record*, and *Statistical Abstract*, 1957 P. 765.
Line E (2)—Commonwealth Edison Co., Chicago.

Excluding farm investment and non-business construction expenditures, business investment proper (Line B) was approximately $33 billion. Line C of the Table shows business plant and equipment expenditures as measured by survey data compiled jointly by the Department of Commerce and the Securities and Exchange Commission (referred to as SEC basis). This total is approximately $4.5 billion smaller than the $33 billion total on Line B because it excludes capital outlays normally chargeable to current expense, e.g., expenditures on account of oil and gas well drilling, and to other minor differences in concept between the two totals. The manufacturing sector accounted for $11.4 billion of the $28.7 billion of total business plant and equipment expenditures shown on Line C.

Line D shows expenditures for new plant and equipment in manufacturing industry as these are measured by the Bureau of the Census. The Census estimates of capital expenditures differ from the SEC estimates primarily because the Census data relate

only to manufacturing establishments whereas the SEC data cover all establishments operated by manufacturing companies regardless of whether the establishment itself engages in manufacturing operations. The Census total of $7.9 billion also excludes expenditures for plant under construction but not yet in operation.

The *Engineering News Record* estimates of industrial engineering construction contracts shown on Line E refer only to the construction portion of investment and are therefore considerably smaller than the total construction and equipment estimates shown in Lines C and D. The final item in the table, which corresponds to the data compiled by the Commonwealth Edison Company, includes only those projects which have a contract value of $100,000 and over and thus cover only part of the $3 billion total of industrial construction contracts awarded.

Of the various concepts of business investment shown in Table 38, local data are available only for Item B (plant and equipment expenditures—census basis) and Item E (large industrial engineering construction contracts).

INDUSTRIAL CONTRACT AWARDS

Commonwealth Edison data on the total volume of large industrial engineering contracts awarded in the Chicago Metropolitan Area and Chicago's share within the United States' total for such contracts are shown in Table 39. Chicago's share of total industrial contract awards made in the United States has varied from a low of 2.0 per cent in 1954 to a high of 16.6 per cent in 1956. For 1953-57, the most recent five year period for which data are available, Chicago's share in U.S. totals have been running somewhat over 10 per cent.

The most frequent form in which these data are presented show Chicago's standing relative to other major metropolitan areas rather than as a share of United States totals. Presented this way Chicago's apparent pace of industrial expansion is even more impressive. Such a comparison is shown for the period 1953-57 in Table 40. Whether measured in terms of contracts

awarded or in terms of the dollar value of contracts, the Chicago Area is far ahead of other major metropolitan centers. For the postwar period as a whole, Chicago also holds a leading position though its margin of lead is somewhat lower than it is for the period 1953-57.

A superficial examination of these data and particularly in the form in which they are presented in Table 40, generally leads

Table 39
Large Industrial Contract Awards, CMA and U.S., 1946-57
(Millions of dollars)

	CMA	U.S.	CMA Share in U.S. (Per cent)
1946	29.3	773.4	3.79
1947	18.4	481.9	3.82
1948	12.0	535.4	2.24
1949	43.4	411.1	10.56
1950	108.6	852.0	12.75
1951	148.0	2,536.2	5.84
1952	103.2	1,430.8	7.21
1953	41.2	1,369.7	3.01
1954	22.4	1,109.1	2.02
1955	107.7	1,494.4	7.21
1956	512.3	3,083.2	16.62
1957	184.6	1,522.6	12.12
1946-57	1,331.6	15,599.8	8.53

Source: Territorial Information Department, Commonwealth Edison Company; Chicago based on data published in *Engineering News Record*.

Table 40
Industrial Construction Contract Awards, CMA and Other Major Metropolitan Areas, 1953-57
(Millions of dollars)

Metropolitan Area	*Expenditures 1953-57†*
Total, Ten Largest Areas*	2,373.7
New York	172.7
CHICAGO	868.3
Los Angeles	195.5
Philadelphia	264.1
Detroit	247.3
Boston	46.7
San Francisco	118.7
Pittsburgh	86.5
St. Louis	52.2
Cleveland	321.7

*Ranked in terms of 1950 Population.
†Cumulative totals.
Sources: Same as Table 39.

to the statement that Chicago is the fastest growing industrial area in the nation, and by a very wide margin at that. For example, the data in Table 40 show that industrial investment in Chicago during the period 1953-57 was approximately the same as the combined total for New York, Los Angeles, Philadelphia and Detroit, or that over one third of the total industrial expansion which took place in the 10 largest metropolitan centers was located in the Chicago Area. This and similar uses of industrial contract awards as an overall measure of industrial expansion and by implication as an indicator of economic growth are seriously misleading.

Three of the 20 sub-industries in manufacturing have a very high weight in the large industrial contract award totals. These three industries, primary metals (especially steel), petroleum and coal, and chemicals, have consistently accounted for over 60 per cent of the total value of all large engineering contracts. Together, these three industries account for only 13 per cent of total manufacturing employment and for approximately 20 per cent of value added by manufacture. The primary metals industry alone, which employs 7.5 per cent of all manufacturing employees and contributes somewhat less than 10 per cent to total value added by manufacture, accounts for nearly a third of the total value of large industrial contract awards. Two factors are responsible for this: (a) large scale plants are the general rule in these three industries, and (b) plant expenditures account for the bulk of capital expenditures in these industries in contrast to most other industries in which the largest part of capital expenditures consists of *equipment* expenditures, which are not of course included in industrial contract awards data.

The expansion of steel capacity in the Chicago Area is the largest single factor responsible for Chicago's very high showing relative to other metropolitan areas in contract awards totals. The primary metals sector alone accounts for 53 per cent of Chicago's total industrial contract awards during the 1953-57 period and for 72 per cent of the exceptionally high level of awards received in the Chicago Area in 1956. However, even if the bias introduced by the relative weight of the steel industry in Chicago's total is removed, contract awards in the Chicago Area have run

ahead of the other metropolitan centers in terms of absolute growth, if not in terms of rate of expansion relative to its existing industrial base.

In looking only at data for metropolitan areas of the nation, it must be remembered that a very large part of heavy industrial expansion is taking place outside the largest metropolitan centers. Thus during the period 1953-57, over 70 per cent of such awards were for construction outside the ten largest metropolitan centers —the state of Texas, for example, received a higher volume of such contract awards than the combined total for New York, Los Angeles, Philadelphia and Detroit.

Table 41
Industrial Construction Contract Awards, by Industry, CMA, 1945-57
(Millions of dollars)

*Industry**	*1945-53†*		*1953-57‡*	
	Amount	*Per Cent of U.S.*	*Amount*	*Per Cent of U.S.*
Primary Metals	122.3	5.8	457.7	18.9
Petroleum and Coal	19.4	1.9	102.7	6.9
Machinery, Nonelectrical	42.4	15.4	55.3	17.2
Fabricated Metals	30.5	14.3	51.3	25.5
Chemicals	67.3	4.5	48.6	3.8
Electrical Machinery	47.3	18.8	47.3	11.2
Transportation Equipment	67.8	9.4	22.5	2.6
Stone, Clay, and Glass	2.5	1.3	20.8	4.9
Printing and Publishing	19.8	19.6	17.5	26.6
Food and Kindred Products	51.8	12.3	17.3	7.0
All Other Industries§	32.3	2.9	27.3	3.2
Total, All Industries	503.4	6.3	868.3	10.1
Excluding Primary Metals	381.1	6.5	410.6	6.7

*Ranked in order of expenditures during 1953-57.
†Fiscal year basis, cumulative totals.
‡Calendar year basis, cumulative totals.
§Includes: paper, textiles, furniture and lumber, leather, apparel, rubber, tobacco, instruments, and miscellaneous manufactures.
Source: Commonwealth Edison Company, Chicago.

A more revealing way of examining industrial contract data as a foreshadowing indicator of future industrial growth, is to do so in terms of the individual sub-industry groups. This is done in Table 41. The primary metals sector is the largest singe component of such contracts, especially in Chicago which accounted for almost one-fifth of the total U.S. expansion in primary metal

producing capacity during 1953-57. Other industries in which the Chicago Area had a very high share of total U.S. expansion expenditures are printing and publishing (27 per cent), fabricated metal products (26 per cent), non-electrical machinery (17 per cent), and electrical machinery (11 per cent). For all other industries combined, industrial expansion in Chicago during the five year period 1953-57 was somewhat lower than was necessary in order for Chicago to maintain its relative position as a producer within these industries. If the primary metals sector is excluded, Chicago's share in all other forms of industrial construction awards was about the same in the five year period 1953-57 (6.7 per cent of U.S.) as it was during the 7 year period 1945-53 (6.5 per cent of U.S.)—and this share is lower than Chicago's share in value added by manufacturing in these industries over the postwar decade. In line with other forms of evidence on growth patterns in the Chicago Area, the industrial composition of contract awards shows Chicago's increasing dependence on highly specialized production in the metal working field and in printing and publishing, and a relative decline in Chicago's position within most other forms of manufacturing activity.

PLANT AND EQUIPMENT EXPENDITURES AS A CLUE TO FUTURE GROWTH

During the postwar decade, gross expenditures for plant construction have accounted for approximately one third of total expenditures on fixed capital by manufacturing establishments. The remaining two-thirds of capital expansion expenditures has taken the form of equipment. The only source of regional data on expenditures for both plant and equipment by manufacturing establishments is that provided by the Bureau of the Census. These estimates are available for metropolitan areas for 1947, 1954, 1955, and 1956. The first two years are based on enumerations contained in the periodic censuses of manufactures; estimates for 1955 and 1956 are based on sample surveys of selected manufacturing establishments. Because these data cover the important

equipment segment of manufacturing capital expenditures, they provide a much broader picture of regional trends in gross additions to manufacturing capacity than are available in the industrial contract awards series discussed earlier. In addition, the census estimates tie-in directly, both in scope and structure, with official estimates on employment, man-hours, and value added by manufacture compiled by the same agency. The share of Chicago establishments, by industry groups, in business expenditures on plant and equipment and in value added by manufacture are shown in Table 42.

The ratio between Chicago's share in plant and equipment expenditures and its share in value-added is an important clue to Chicago's future position within each of the industry groups

Table 42
Capital Expenditures and Value Added by Manufacture, CMA Share in U.S., 1947, 1954-56

	CAPITAL EXPENDITURES				VALUE ADDED			
	1956	*1955*	*1954*	*1947*	*1956*	*1955*	*1954*	*1947*
All Industries	7.08	6.25	5.47	7.01	6.77	6.67	7.51	7.43
Durables	8.81	7.14	6.56	8.74	7.75	7.50	7.55	8.71
Nondurables	4.50	5.11	4.26	5.59	5.44	5.54	5.70	6.12
Food	6.64	5.33	5.86	4.80	6.92	7.08	7.20	7.92
Textiles	0.53	1.93	.85	.39	1.07	1.09	1.03	.71
Apparel	3.71	3.26	3.37	3.67	3.50	3.64	3.79	5.02
Lumber and Wood	1.21	.86	.51	.95	1.49	1.36	1.47	1.41
Furniture and Fixtures	6.95	7.78	9.55	10.35	7.18	7.45	7.68	8.48
Paper	1.91	1.09	1.59	2.33	3.73	3.84	3.89	4.27
Printing and Publishing	8.83	8.99	10.29	10.68	10.45	10.70	10.81	11.68
Chemicals	3.84	5.07	2.88	3.78	5.10	5.07	5.48	7.18
Petroleum and Coal	6.28	10.06	5.98	18.05	7.12	7.71	8.53	8.98
Leather	5.20	3.19	5.23	3.70	3.59	3.61	3.49	4.29
Stone, Clay, and Glass	5.20	5.34	3.35	2.17	4.00	3.77	3.88	4.06
Primary Metals	14.94	12.57	10.36	13.79	10.96	11.16	11.78	11.76
Fabricated Metals	9.01	7.89	8.43	9.58	9.96	10.01	9.88	10.07
Machinery	7.18	7.85	6.84	8.21	8.86	8.32	8.26	8.97
Elec. Machinery	8.88	10.08	10.32	16.17	11.59	12.00	11.64	16.03
Transportation Equipment	6.42	2.01	3.37	4.30	3.21	3.09	3.21	4.02
Instruments	8.92	8.22	5.44	7.75	10.80	9.25	8.99	11.41
Miscellaneous	7.20	6.19	4.97	8.04	6.82	6.37	5.79	8.26
Other*	1.90	1.66	1.23	1.72	1.39	1.98	1.43	1.07

*Includes tobacco and rubber.

Sources: U.S. Bureau of the Census, *Census of Manufactures*, 1947, 1954. *Annual Survey of Manufactures*, 1955, 1956.

shown in Table 42. Subject to certain qualifications, this ratio—which will be referred to as the capital expenditure ratio—is a broad indicator of whether Chicago's share in the output of any given industry is likely to rise, fall, or remain relatively constant. A capital expenditure ratio larger than unity for any industry indicates that Chicago's share in additions to capacity in that industry is larger than Chicago's share in existing capacity—and hence that Chicago's share in future capacity, output, and employment in the industry under consideration are all likely to rise. Similarly, a capital expenditure ratio of less than unity indicates that Chicago's share in the industry is likely to decline in the future.

The interpretation of capital expenditure ratios as indicators of future developments is subject to a number of qualifications, at least four of which should be noted. One qualification is that year-to-year movements in capital expenditure ratios for particular industries are likely to reflect erratic changes in the data rather than shifts in underlying trends. These erratic movements are due in part to normal sampling variability and in part to the bunching of industrial expansion projects in particular years. This difficulty can be resolved by measuring capital expenditure ratios with reference to average data over a three year period rather than with reference to individual years.

A second qualification is that high capital expenditure ratios in any industry could result from a more rapid substitution of capital for labor in the Chicago Area than in the nation as a whole. If this is true, capital expenditure ratios larger than unity will not necessarily indicate a forthcoming increase in Chicago's share in industrial output. However, for any given industry, the rate at which capital is substituted for labor tends to be reasonably uniform throughout the economy as a whole, and the possible errors in interpretation arising from this source are likely to be small. A third qualification is that capital expenditure ratios larger than unity foreshadow larger shares in future output only if capital replacements in any given area are roughly proportional to that area's output capacity. To the extent that this is not true, the regional distribution of *gross* plant and equipment expenditures will not reflect the regional distribution of *net* expansion

in industrial capacity. Like the second qualification, errors from this third source are also likely to be small.

A fourth source of possible difficulty in the interpretation of capital expenditure ratios arises from the fact that some of the sub-industry groups shown in Table 42 lump together industrial activities which are highly dissimilar with respect to capital requirements. One such example is the paper and paper products industry. The segment of this industry engaged in the primary production of pulp, paper and paperboard has invested more capital per dollar of value-added than is true of the segment of the industry engaged in fabricating and finishing paper products. Because of this fact, capital expenditure ratios computed for the industry as a whole will tend to reflect an area's relative specialization in primary as opposed to finished paper products, rather than any underlying trend in the area's share in future employment and output in the industry as a whole. This difficulty can be overcome only by computing capital expenditure ratios with reference to each detailed component of any such industry rather than with respect to the industry as a whole as is done in Table 42.

In spite of the limitations noted above, capital expenditure ratios provide the best single indication of future shifts in an area's share in individual industrial markets. Unlike mechanistic measures of past trends in employment or output, capital expenditure ratios provide a dynamic picture of highly current developments. Because these investments reflect long-term planning, they provide a tangible summary of many factors, most of them individually unmeasurable, which jointly determine the regional distribution of industrial expansion.

Capital expenditure ratios computed for the three year period 1953-54 and 1956 are shown in Table 43 for each of the manufacturing industry groups in which the Chicago Area produces 5 per cent or more of total U.S. output. The Table also contains other relevant evidence on indicated trends in Chicago's industrial base. The principal insights provided by the data in Table 43 are as follows:

1. The industries listed in Table 43 account for a high and rising proportion of manufacturing employment in the Chicago Area. Over 91 per cent of the total increase in the number of

Table 43
Indicated Trends in Manufacturing Growth, CMA, 1947-57

Industry	RELATIVE POSITION WITHIN CMA MANUFACTURING: Employment Share in 1957 (1)	Trend in Employment Share (2)	CMA'S RELATIVE POSITION IN U.S. INDUSTRY TOTALS: Employment 1957 (3)	Value Added 1954-56 (4)	Capital Expenditures 1954-56 (5)	INDICATED TREND IN CMA'S SHARE IN U.S.: Employment Trend: 1947-57† (6)	Capital Expenditure Ratio (7)
*Primary Metals	13.8	+	10.7	11.2	13.2	10.29+.046	1.18
*Electrical Machinery	13.8	+	11.5	11.7	9.7	13.16—.218	0.82
*Machinery, Nonelectrical	13.4	+	7.8	8.5	7.3	8.37—.018	0.85
*Fabricated Metals	10.8	+	8.7	9.9	8.5	9.12—.101	0.85
Food	9.5	—	6.4	7.1	6.0	7.48—.095	0.85
Printing and Publishing	8.4	—	10.0	10.6	9.3	11.64—.187	0.88
Chemicals	4.0	+	4.8	5.2	3.9	5.39—.048	0.75
*Miscellaneous Manufactures	3.9	+	8.1	6.3	6.2	8.78—.035	0.98
*Instruments	2.5	+	7.5	9.7	7.7	8.73—.136	0.80
Furniture and Fixtures	2.3	—	6.2	7.4	7.9	7.66—.146	1.07
Petroleum and Coal	1.9	—	7.7	7.7	7.2	8.13—.073	0.93

*Metal-working industries.

†Value of least-squares trend fitted to Chicago's share in U.S. employment, 1947-57. First item denotes trend value of share in 1947, second item measures percentage points of annual average increase (+) or decrease (—) in share.

Sources: U.S. Bureau of the Census, *Census of Manufactures, 1954, Annual Survey of Manufactures, 1955, 1956; Monthly Labor Review* and Technical Appendix to this study.

production workers in Chicago manufacturing since 1939 are concentrated in these industries. The most dramatic increases have taken place in the metal-working segment of manufacturing in Chicago. This sector (including transportation equipment, not shown in the Table) accounted for only 50 per cent of total production workers in manufacturing in Chicago in 1939, but almost 90 percent of the total *increase* in production workers since 1939 has been in the metal working sector. Without exception, all six metal working industries in Chicago's economic base have increased their share in basic employment in the Chicago Area over the postwar decade.

2. The primary metals, mainly iron and steel, has been the most dynamic sector in Chicago's industrial base since World War II, and the largest single factor in the area's postwar expansion as an industrial center. The production of primary metals is also the only significant activity for which postwar employment trends and capital expenditure ratios indicate a further rise in Chicago's share of the national market. The fact that the broad geographical region which comprises Chicago's natural market for steel is still a steel deficit area confirms the future growth in Chicago's share in this industry indicated by a capital expenditure ratio of 1.18. While the absolute growth of primary metal production as a source of employment and income in the Chicago economy depends on the absolute growth in the nation's demand for iron and steel products, there appears to be little doubt that Chicago's relative dependence on this industry will increase in the future.

3. Apart from primary metals production, Chicago's share in other industries which constitute its economic base, has undergone a steady decline during the postwar decade. With one exception, furniture and fixtures, capital expenditure ratios for these industries indicate that the observed decline in Chicago's share of employment in these industries is likely to continue in the future. The decline in non-electrical machinery and miscellaneous manufactures has been relatively small. But significant declines have taken place in electrical machinery, instruments, printing and publishing, and fabricated metal products and food. Although the Chicago Area is still the largest single center in the U.S. for most of these industries, it has been losing the market

share it previously held in these industries, especially to the newer manufacturing centers.

4. Unfortunately, capital expenditure data are not available for non-manufacturing sectors of local economic activity. Postwar trends in Chicago's share in employment in these activities are shown in Table 44. The greatest part of employment in these non-manufacturing industries is residentiary and a predominant portion of output is marketed locally. Three sectors in which some part of output consists of specialized services that are "exported," are: wholesale trade, finance and insurance services, and transportation. In addition, some portion of output in the retail trade and service sectors represents specialized export production, but, taken as a whole, these sectors are essentially residentiary in character. Chicago's share in non-manufacturing employment has been declining over the postwar period, and this is largely a direct reflection of the gradual decline in Chicago's share in national income and output. Future shifts in these shares depends essentially on developments in the major manufacturing activities which comprise Chicago's principal economic base. Two exceptions to the decline in employment shares outside manufacturing are wholesale trade and contract construction. The contract construction industry reflects the more rapid growth which has taken place in residential and industrial construction in the Chicago Area since 1950. Chicago's share in wholesale employment has been rising whether measured in terms of employment share or share in wages and salaries paid in the industry, and

Table 44
CMA Share in U.S. Nonmanufacturing Employment, 1947-57

Industry	*Trend in CMA's Share in U.S. Employment**
Contract Construction	3.95+.046
Wholesale Trade	5.58+.046
Retail Trade	4.93—.052
Finance, Insurance, Real Estate	6.73—.042
Transportation	5.94—.017
Communication and Public Utilities	5.19—.079
Services†	5.32—.024
Civilian Government	3.51—.040

*See footnote to Table 43.
†Excludes domestic service workers.
Sources: *Monthly Labor Review* and Technical Appendix to this study.

developments associated with the opening of the St. Lawrence Seaway are likely to reinforce Chicago's rising share in this industry.

Chapter 7

ECONOMIC STABILITY

THE BEHAVIOR of the Chicago economy during nation-wide business fluctuations shows the area's close and growing dependence upon national markets. The local export industries which link Chicago with the rest of the nation, and which play such an important role in its past and prospective growth, also act as the principal vehicle through which short-run changes in the level of economic activity are transmitted from national markets to the local economy. Over the past forty years, employment and output in the Chicago Area have responded closely and increasingly to fluctuations in national economic activity. Before 1929, when the Chicago economy was growing faster than the nation as a whole, fluctuations in the local economy were milder than corresponding national fluctuations. Since 1929, the Chicago economy has exhibited greater instability than the national economy. This chapter analyzes the pattern of economic fluctuations in Chicago since 1952—the only period for which monthly data on employment and unemployment are available.

Chart 1 shows movements in the number of nonagricultural wage and salary workers in Chicago from 1952-59 and illustrates the relatively sharp response of the local economy to cycles in national economic conditions. In the two business downturns which occurred during the period covered, the average decline in employment was 23 per cent more severe in Chicago than in the nation. In addition, the average duration of the decline—measured from the peak month of employment to the subsequent month of complete recovery to the previous peak level—lasts substantially longer in Chicago than in the U.S. economy as a

whole. The behavior of employment in the Chicago economy relative to the rest of the U.S., in terms of month to month changes in the number of employed wage and salary workers in nonagricultural industries, is shown in greater detail in Table 45 and in Charts 2 and 3.

Measured from peak to trough of the 1953-54 recession, nonagricultural employment in Chicago declined 5.5 per cent relative to 4.7 per cent in the rest of the U.S. Manufacturing employment in Chicago dropped 11.3 per cent during the same period and accounted for 84 per cent of the total decline in Chicago's nonagricultural employment; in the rest of the U.S., manufacturing employment declined by 9.5 per cent and accounted for 70 per cent of total employment decline.

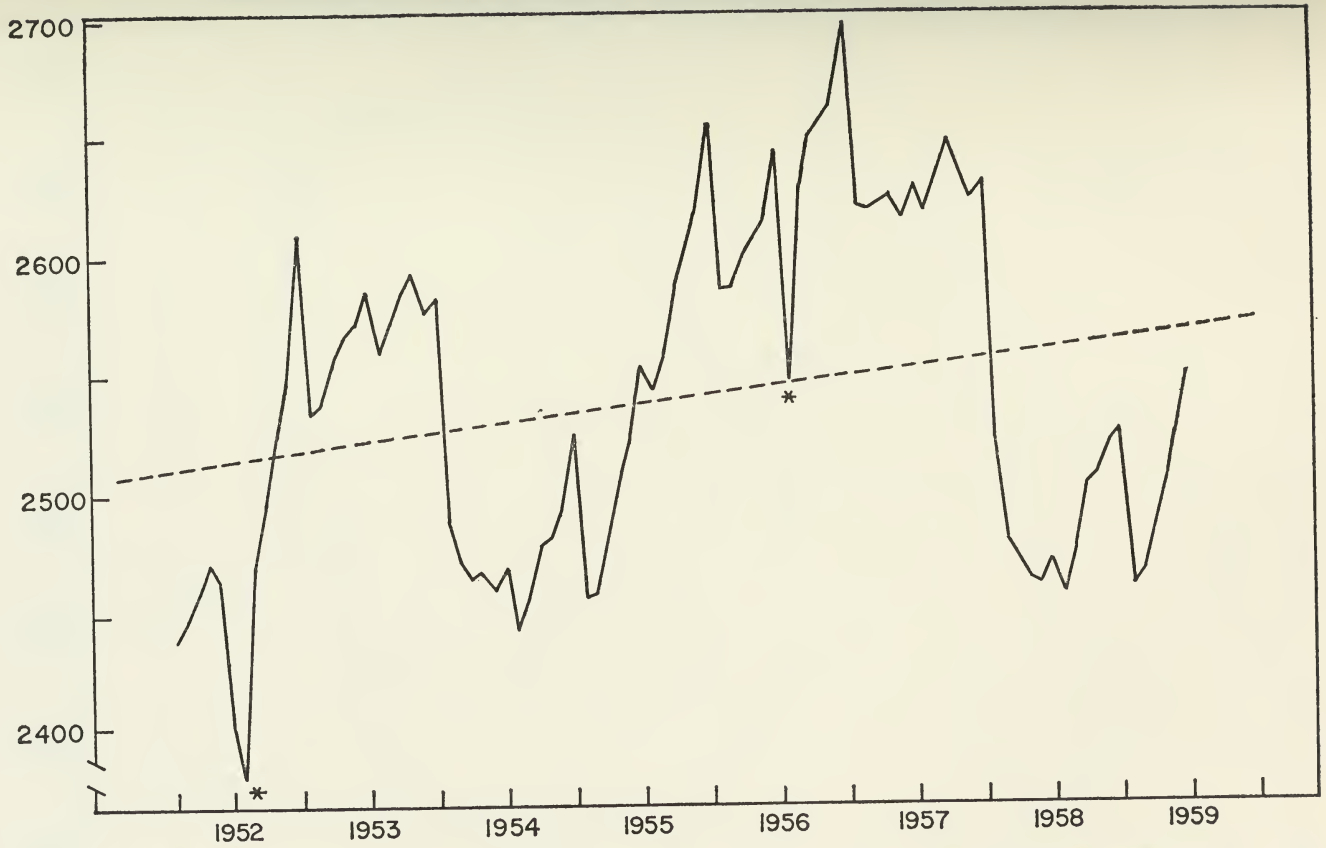
The recession of 1957-58 was considerably more severe both in Chicago and in the nation: the number of wage and salary workers in Chicago declined by 7.9 per cent from the peak reached in September, 1957 to the trough in July, 1958; the decline in the rest of the nation was 5.6 per cent. Manufacturing again accounted for the largest proportion of the total decline—72 per cent in Chicago as against 51 per cent in the nation.

In both recessions the duration of the decline was longer in Chicago than in the United States. During the 1953-55 cycle of recession and recovery, it took 24 months for employment in Chicago to attain the preceding peak of October, 1953. In the U.S. as a whole, employment experienced full recovery 21 months after the 1953 peak.

The 1957-59 cycle shows a similar pattern: employment in the U.S. economy was back to its September, 1957 peak by June, 1959, whereas employment in Chicago in June, 1959 was still 3.7 per cent below the September, 1957 peak.

Chart 1

Nonagricultural Wage and Salary Workers in CMA: 1952-59 (Thousands)



Source: Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Chicago Metropolitan Area*, monthly. Data are unadjusted monthly totals; long-term trend: $Yc = 2{,}510.9 + .654X$.

*Steel strike.

Chart 2

Nonagricultural employment index: CMA and U.S., 1953-55

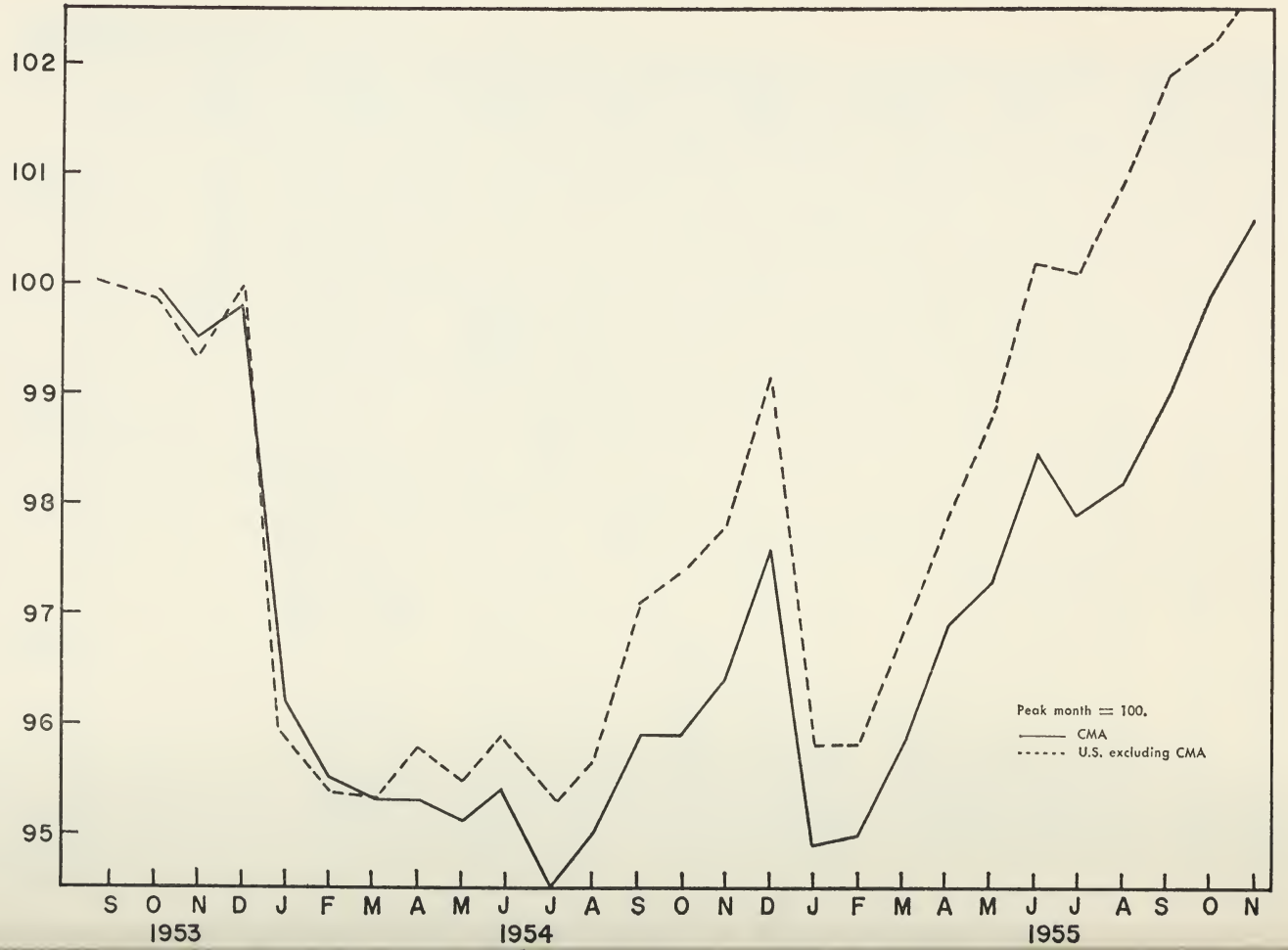


Chart 3

Nonagricultural employment index, CMA and U.S., 1957-59

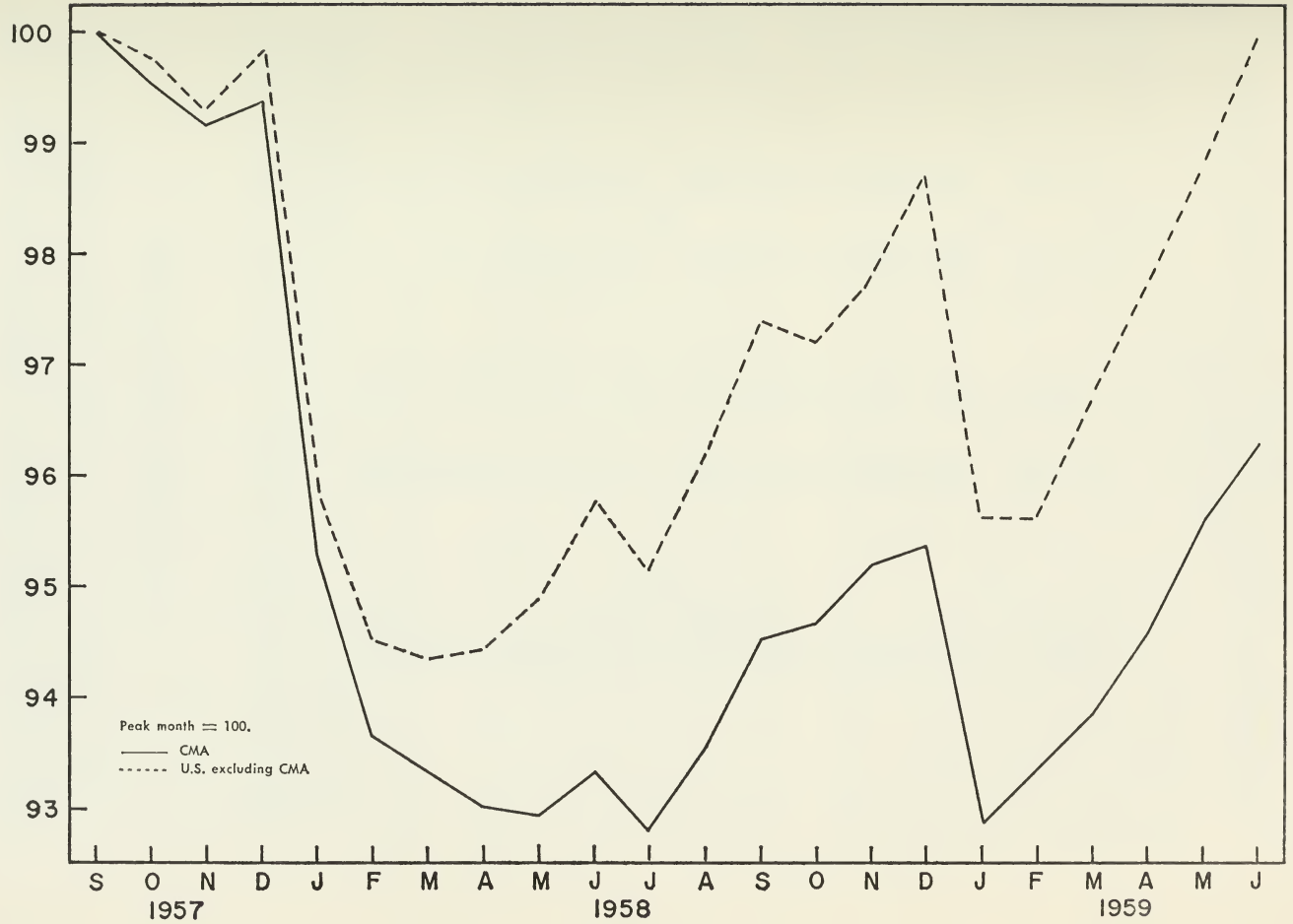


Table 45
*Index of Wage and Salary Workers in Nonagricultural Industries, CMA and U.S.**
(Selected periods)

	U.S.*	CMA	U.S.*	CMA
1953 and 1957	*1953*		*1957*	
September	100.0	—	100.0	100.0
October	99.9	100.0	99.8	99.5
November	99.3	99.5	99.3	99.1
December	100.0	99.8	99.9	99.4
1954 and 1958	*1954*		*1958*	
January	95.9	96.2	95.8	95.2
February	95.4	95.5	94.5	93.6
March	95.3	95.3	94.3	93.3
April	95.8	95.3	94.4	93.0
May	95.5	95.1	94.9	92.9
June	95.9	95.4	95.8	93.3
July	95.3	94.5	95.4	92.8
August	95.7	95.0	96.1	93.5
September	97.1	95.9	97.4	94.5
October	97.4	95.9	97.2	94.7
November	97.8	96.4	97.7	95.2
December	99.2	97.6	98.7	95.4
1955 and 1959	*1955*		*1959*	
January	95.8	94.9	95.6	92.8
February	95.8	95.0	95.6	93.1
March	96.8	95.8	96.7	93.8
April	97.9	96.8	97.7	94.6
May	98.8	97.3	98.8	95.4
June	100.2	98.5	100.0	96.3
July	100.1	97.9	—	—
August	100.9	98.2	—	—
September	101.9	99.0	—	—
October	102.4	99.9	—	—
November	102.7	100.6	—	—

*U.S. total excluding CMA.

Employment peak in the month immediately preceding the month of first decline represents the index-base.

Sources: U.S. Bureau of Labor Statistics, *Monthly Labor Review;* Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Chicago Metropolitan Area,* monthly.

CAUSES OF INSTABILITY

The relatively greater instability of nonagricultural employment in Chicago during postwar recessions is a result of two factors: (a) the Chicago economy's somewhat slower growth than

that of the rest of the U.S. and (b) the greater dependence of the Chicago economy on manufacturing activity in general and on durable goods manufacturing in particular.

The fact that employment in the Chicago Area has been growing at a somewhat slower pace than employment in the rest of the U.S. during the post-war period, accounts, in part, both for the larger declines observed in Chicago's employment relative to the U.S. during downturns in business activity and for the longer interval which elapses before it re-achieves levels of employment prevailing during preceding peaks. During the decade of the 1920's when the Chicago economy was growing faster than the U.S. economy, employment in Chicago declined less than in the rest of the country, and recoveries to previous levels were achieved more quickly in Chicago than for the nation as a whole.

While an accurate separation of trend components and cyclical components in employment data is difficult because of varying seasonal factors, the evidence suggests that the lower trend of employment growth in Chicago explains only part of the larger declines observed in the Chicago economy during the downward phase of business activity. The remainder of Chicago's relatively larger declines in employment results from the fact that Chicago's industrial structure is more heavily weighted with industries in which employment and output react relatively strongly during business fluctuations.

Apart from the construction industry, which has its own short-run cycles of activity, the bulk of fluctuations in employment and output originate within the durable goods sector of manufacturing. The relative predominance of durable goods manufacturing in Chicago's economy is an important reason for the pattern of short-run fluctuations observed in local employment and output. Although the durable goods sector accounts for only about 20 per cent of the total national output of goods and services, fluctuations in durable goods production account directly or indirectly for a very high percentage of total changes in employment. During the 1957-58 recession, for example, employment in the durable goods sector fell 10 per cent in the U.S. economy and accounted for one-third of the total decline in national em-

ployment. In Chicago, employment in durable goods declined more sharply than in the rest of the country—falling by 17.5 per cent. Because of the greater relative importance of this class of industry in Chicago, this fall accounted for almost 60 per cent of the total decline in local employment.

What is true of durable goods in general is even more true of the five major metal-working industries which produce relatively long-lived capital goods for producers and consumers—primary metals, fabricated metals, electrical machinery, non-electrical machinery and transportation equipment—and which are therefore subject to wide swings in demand.

These industries represent 23 per cent of total nonagricultural wage and salary workers in Chicago as against 14 per cent in the U.S. Because earnings in these industries are well above average earnings, they play an even bigger role in wage and salary receipts than they do in employment totals. Since these five durable goods industries account for over one half of total "exports" from the Chicago Area and since roughly one half of the total output of each of these industries is marketed outside of Chicago, any change in this outside demand has a material effect on total output in employment in the Chicago economy.

Although the Chicago Area has a higher concentration of manufacturing employment in durable goods production than the nation as a whole, it occupies a median position in this respect when compared against the 15 largest manufacturing centers in the nation. The relative concentration of these areas in durable goods production is shown in Table 46. Several areas—notably Pittsburgh, Detroit, Cleveland, Los Angeles and Buffalo—depend far more heavily than Chicago on the production of durables. On the other hand, New York, Philadelphia, Boston, and San Francisco have markedly lower concentrations in the durable goods sector.

If differences in growth trends are removed, there is a strong relation between an area's degree of concentration in durables, on the one hand, and the severity of the decline in employment it suffers during recessions, on the other. Thus during the recession of 1957-58, which was predominantly a durable goods recession, employment in Detroit, Buffalo, Pittsburgh, and Cleveland

declined more sharply than in the Chicago Area. Chicago in turn declined more sharply than all other major areas.

Table 46
Number of Workers in Durable Goods Industries as Per Cent of Total Employment in Manufacturing, Fifteen Largest Manufacturing Metropolitan Areas, 1947 and 1954*

Metropolitan Area	1954 Per Cent in Durables	1954 Rank	1947 Per Cent in Durables	1947 Rank
Pittsburgh	83.29	1	85.07	2
Detroit	82.22	2	86.22	1
Cleveland	76.71	3	76.06	3
Los Angeles	71.60	4	60.77	7
Buffalo	70.26	5	67.00	5
Milwaukee	69.94	6	69.14	4
Chicago	65.31	7	64.29	6
Baltimore	61.19	8	60.41	8
Cincinnati	59.86	9	55.96	9
St. Louis	55.64	10	51.61	11
Minneapolis-St. Paul	52.10	11	52.76	10
Philadelphia	49.28	12	45.18	13
Boston	47.62	13	42.27	14
San Francisco	47.12	14	48.77	12
New York	43.34	15	39.30	15
All Fifteen Areas	59.66	—	57.27	—
Average U.S.A.	56.21	—	54.38	—
Fifteen Areas Durables as Per Cent of All U.S.A. Durables	44.00	—	44.71	—

*Areas which in 1954 accounted for largest number of manufacturing employment.
Sources: U.S. Bureau of the Census, *Census of Manufactures: 1947, 1954.*

THE BEHAVIOR OF UNEMPLOYMENT

The severity of economic fluctuations in the U.S. as a whole is generally measured in terms of its impact on unemployment rather than on the number of people employed. Unfortunately, the unemployment estimates which are generally used in national analysis are based on national samples which do not provide information on unemployment at the metropolitan level. The only evidence on unemployment in the Chicago Area consists of estimates compiled by the Illinois State Department of Labor. These estimates cover the Chicago-Calumet Labor Market area which accounts for approximately 96 per cent of total employ-

ment in the Chicago Metropolitan Area. These local estimates are derived by an entirely different procedure than that used in compiling national estimates of unemployment, and therefore are not strictly comparable with national data. In addition to the problem of non-comparability with national data, the use of local unemployment estimates as a basis for measuring the severity of recessions in Chicago is subject to a number of important qualifications.

Table 47
Unemployment as Per Cent of Total Civilian Labor Force, CMA and U.S.
(Selected periods)

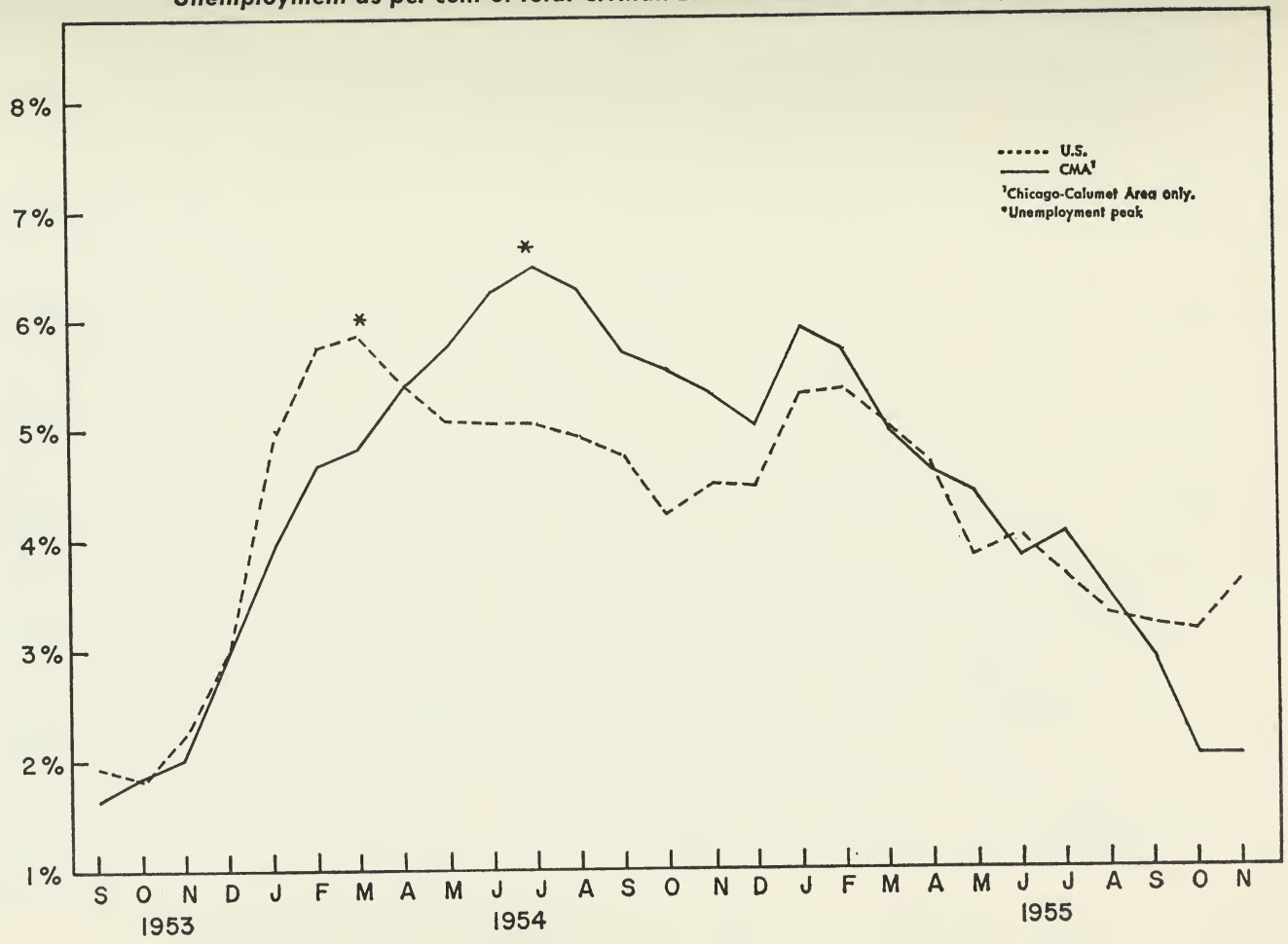
	U.S.	CMA*	U.S.	CMA*
1953 and 1957	*1953*		*1957*	
September	1.96	1.67	3.74	2.66
October	1.83	1.85	3.66	2.85
November	2.25	2.04	4.68	3.38
December	2.95	3.01	4.98	4.23
1954 and 1958	*1954*		*1958*	
January	4.91	3.94	6.73	5.77
February	5.76	4.69	7.70	6.82
March	5.84	4.87	7.70	7.81
April	5.41	5.38	7.53	8.22
May	5.13	5.75	7.11	8.37
June	5.11	6.26	7.72	8.53
July	5.11	6.47	7.51	8.88
August	4.95	6.26	6.71	8.15
September	4.75	5.70	5.98	7.12
October	4.22	5.52	5.51	6.76
November	4.48	5.31	5.60	6.74
December	4.47	5.08	6.03	6.69
1955 and 1959	*1955*		*1959*	
January	5.27	5.90	7.01	7.52
February	5.34	5.70	7.04	7.67
March	4.99	4.99	6.40	6.78
April	4.58	4.60	5.28	6.07
May	3.82	4.40	4.88	5.35
June	4.02	3.83	—	—
July	3.66	4.01	—	—
August	3.30	3.48	—	—
September	3.21	2.92	—	—
October	3.17	2.19	—	—
November	3.56	2.18	—	—

*Chicago-Calumet Area only. Includes Cook and DuPage Counties in Illinois and Lake County, Indiana. This area accounts for approximately 96 per cent of total CMA civilian labor force.

Sources: U.S. Bureau of Labor Statistics, *Monthly Labor Review;* Illinois State Department of Labor, Division of Unemployment Compensation, *Total Civilian Labor Force: Chicago-Calumet Area,* mimeographed monthly.

Chart 4

Unemployment as per cent of total Civilian Labor Force: U.S. and CMA[1], 1953-55



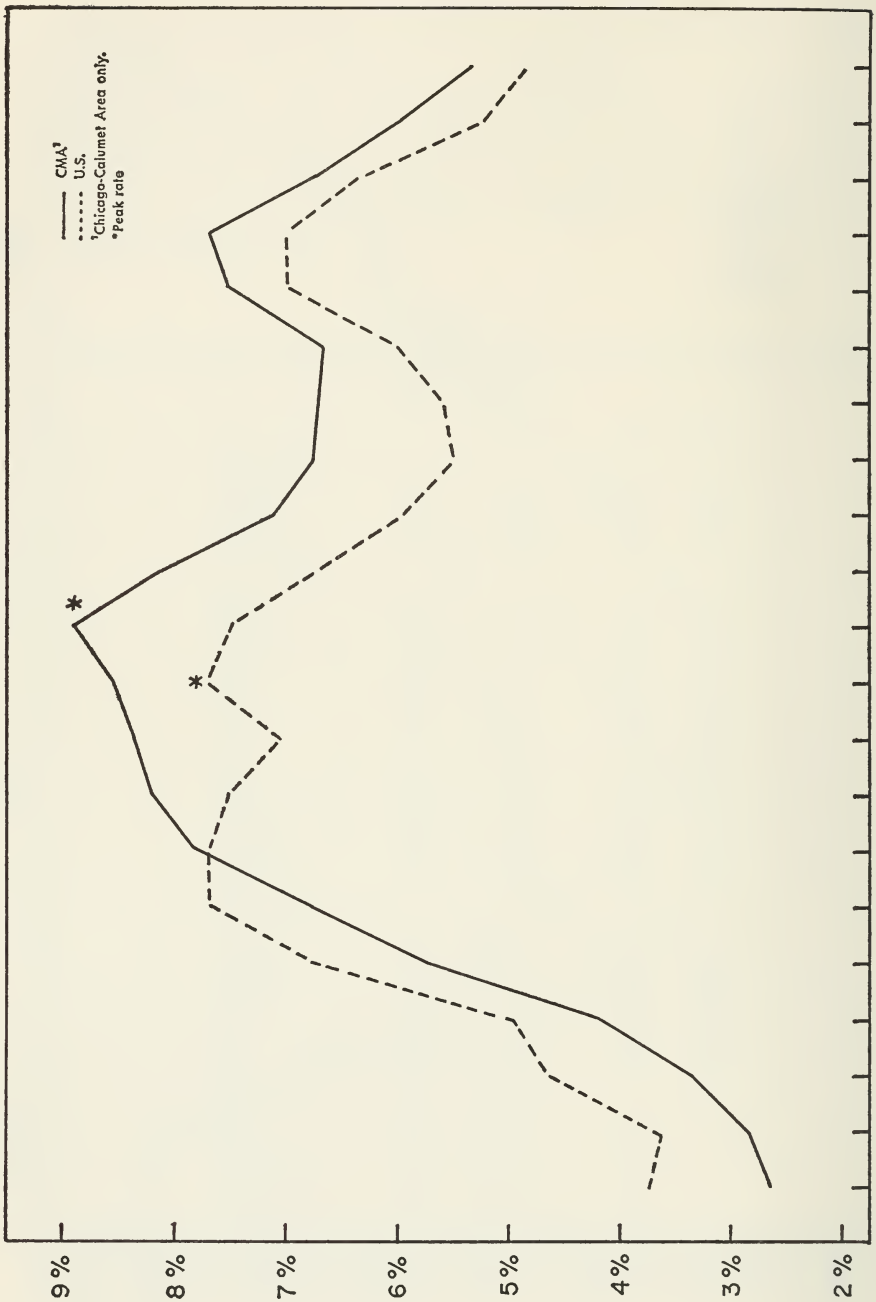


Chart 5
Unemployment as per cent of total Civilian Labor Force: U.S. and CMA[1], 1957-59

One qualification is that the average level of unemployment in Chicago—measured as a percentage of the total civilian labor force—tends to be lower than the average level of unemployment in the nation. Because of this fact, the relative severity of an economic decline in the Chicago Area must be measured in terms of the *change* in the unemployment rate in Chicago relative to the corresponding change in the nation rather than as a simple comparison of unemployment rates prevailing during recessions.

A second qualification of importance which must be taken into account in using unemployment rates is the fact that the timing of changes in business activity in Chicago does not correspond exactly with the timing of national changes in economic activity. For example during the 1953-54 recession, the unemployment rate in the U.S. rose from its low point of 1.96 per cent in September, 1953 to a peak of 5.84 per cent in March, 1954. During this period the unemployment rate in the Chicago-Calumet area rose from 1.67 per cent in September, 1953 to 4.87 per cent. A comparison of the unemployment rate in Chicago relative to the national rate as of March, 1954 would have suggested that the Chicago Area was less subject to the recession than the nation as a whole. However, Chicago's unemployment rate continued to rise after March, 1954 and reached its own peak in July, at which time it was 6.47 per cent relative to a July rate of 5.11 per cent in the nation.

Similar developments occurred during the 1957-58 recession. At the beginning of the recession in September, 1957, the unemployment rate for the Chicago Area was 2.66 per cent as against a rate of 3.74 per cent in the nation. National unemployment rose to a peak in February, 1958 at which time it stood at 7.70 per cent of total civilian labor force. At this time the unemployment rate in the Chicago-Calumet area was 6.82 per cent. Again an interpretation based on a simple comparison of these two rates as of February, 1958 would have been deceptive. Unemployment in Chicago continued to rise until July, 1958 in which month it reached 8.88 per cent relative to a national rate of 7.51 per cent prevailing in that month.

The use of local unemployment data as a measure of local business conditions relative to national business conditions during

a recession is subject to yet another qualification. Persons who become disemployed in the Chicago Area during a business downturn tend to move out of the area's civilian labor force and therefore do not show up in unemployment statistics. In contrast the civilian labor force at the national level continues to grow during downturns in business activity. This difference is due in large measure to the movement of persons into and out of the Chicago Area in response to changing business conditions—a movement which does not, of course, exist for the nation as a whole.

In the 1957-58 recession, for example, the total U.S. civilian labor force increased by approximately 2 million persons, or 2.8 per cent, from October, 1957 to July, 1958. In Chicago, on the other hand, the civilian labor force actually declined by 1,300 persons during this period. While there is little direct evidence on the role played by the physical out-migration of persons of working age from the Chicago Area during recessions, the indirect evidence which is available suggests that this factor is the most important cause of the difference in the behavior of the civilian labor force in Chicago relative to the nation during downturns in business activity.

If all of the qualifications to which unemployment data are subject are taken into account, these data confirm the pattern of relative instability disclosed by a direct examination of movements in employment.

Chapter 8

PERSONAL INCOME

THE MAINSTREAM of the analysis, thus far, has been concerned with the production facet of the Chicago economy, with the primary emphasis on the level and growth of employment and output. This chapter, and those which follow, will be concerned with the flow of income received by persons in the area, and the way in which this income is disposed of through personal tax payments, consumer expenditures, and saving.

The total value of output generated by economic activity in the Chicago Area, measured in terms of income produced by local economic activity, can also be traced in terms of the way it is distributed among those who participate in its production. The relative importance of the various distributive shares is shown in Table 48 for selected years.

Not all of the distributive shares are actually disbursed to

Table 48
Civilian Income Produced by Distributive Share, CMA, 1940, 1946, 1950, 1955

	1940	*1946*	*1950*	*1955*
Total Civilian Income (Billions of dollars)	4.8	9.1	12.9	17.0
Distributive Shares (per cent):				
Labor Income	66.8	70.0	67.4	71.1
Wages and Salaries	63.7	66.9	64.0	66.9
Supplements to Wages and Salaries	3.1	3.1	3.4	4.2
Net Interest	4.7	1.0	1.7	2.4
Rental Income	3.2	3.1	3.4	3.1
Business Income before Taxes*	25.3	25.9	27.5	23.4
Corporate Profits*	15.5	14.4	18.9	15.7
Proprietor's Income*	9.8	11.5	8.6	7.7

*Includes inventory valuation adjustment.
Source: Table 9.

individuals. For example, some part of supplements to wages and salaries flows directly to the government in the form of employer and employee contributions to social insurance. In addition, taxes on corporate profits and corporate retained earnings are not received by individuals.

Nor is all of the income disbursed to individuals received by individuals resident in Chicago. Some wage and salary payments go to persons who work in Chicago but live outside the metropolitan area. However, this is balanced by a counterflow of wages and salaries to Chicago residents who work outside the area. In the absence of specific evidence, it can be assumed that these two flows cancel. More important is the net flow of income produced in Chicago which accrues to non-Chicagoans who own property rights in the area. By the same token, residents of the area receive income from property rights located elsewhere.

The total flow of civilian personal income received from productive activity and private property rights is supplemented by two other forms of personal income receipts. One of these consists of interest payments on government obligations; the other consists of a variety of "transfer payments" from government, mainly from social security programs, veteran programs, and state assistance. Yet another source of personal income which does not originate in civilian economic activity are military salaries and allotments received by residents of the area.

Table 49 shows the relationship between income produced

Table 49
Civilian Income Produced and Personal Income Received, CMA and U.S., 1955

	CMA (Millions of dollars)	U.S.* (Billions of dollars)	CMA's Share in U.S. (Per cent)
CIVILIAN INCOME PRODUCED	16,988	311.8	5.45
less: Civilian Contribution for Social Insurance	578	10.5	5.53
Corporate Taxes Generated	1,495	21.6	6.95
Property Income Originating	2,115	38.4	5.52
plus: Personal Property Income Received	1,947	37.3	5.21
Transfer Payments Received	578	17.3	3.31
equals: CIVILIAN PERSONAL INCOME	15,325	295.9	5.17
plus: Military Wages and Allotments	146	7.5	1.95
equals: TOTAL PERSONAL INCOME	15,471	303.4	5.10

*Continental U.S. only. National data from *Survey of Current Business*, July 1957, August 1957. CMA data from Tables 9 and 10.

and personal income received for the year 1955. Chicago's share in Personal Income (5.10 per cent) is lower than its share in Civilian Income produced (5.45 per cent). This is due partly to the fact that Chicago's share in those forms of income not disbursed to individuals (corporate taxes, retained earnings, and social insurance contribution) is higher than its share in disbursed income. A second reason is that Chicago's share in those forms of income not derived from civilian production (transfer payments and military income) is lower than its share in income produced.

CHICAGO'S SHARE IN PERSONAL INCOME

It is useful to analyze metropolitan income in terms of the same categories used earlier in analyzing population and manufacturing employment—namely in terms of regional shares in national totals and Chicago's share in the region. These data are presented in Table 50. The share of the East North Central

Table 50
Civilian Personal Income, CMA, ENC States and U.S., 1929-57

Year	*Civilian Personal Income, U.S. (Billions of dollars)*	*Share of ENC States in U.S. (Per cent)*	*Share of CMA in ENC States) (Per cent)*	*Share of CMA in U.S. (Per cent)*
1929	85.4	23.7	—	—
1940	78.1	22.8	24.4	5.56
1946	170.0	22.1	23.0	5.08
1947	186.3	22.7	23.0	5.21
1948	204.6	23.1	22.8	5.26
1949	202.4	22.6	23.3	5.27
1950	221.7	22.8	22.8	5.20
1951	246.5	23.1	22.5	5.20
1952	261.2	23.0	22.2	5.11
1953	275.4	23.7	22.2	5.25
1954	277.8	23.1	22.2	5.13
1955	295.9	23.1	22.4	5.17
1956	316.8	23.1	22.3	5.16
1957	337.9	22.8	22.7	5.18

Sources: U.S. and ENC States: *Personal Income by States Since 1929*; and *Survey of Current Business*, August 1957, August 1958. Data adjusted to exclude military income. CMA data from Table 10.

Region in total U.S. personal income has been remarkably constant since 1929. The concentration of regional personal income in Chicago, which receives a fifth of the total income in the East North Central States, declined somewhat during the war, but since 1946 has remained virtually unchanged if year to year fluctuations are ignored. These findings confirm those shown by the earlier analysis of population, employment, and output: during the war Chicago's overall position within the economy declined from pre-war levels—but Chicago's post-war growth has run about parallel with national growth.

Between 1946-47[1] and 1956-57, civilian personal income in the U.S. rose about 84 per cent. During the same period, Chicago income also rose 84 per cent. However, the general level of consumer prices in Chicago rose somewhat more than the national average, and Chicago's share in personal purchasing power has declined during the post-war decade. In dollars of constant,

Table 51
Consumer Price Index, U.S. and Chicago, and CMA's Share in Purchasing Power, 1940, 1946-57

Year	Consumer Price Index* (1947-49 = 100) Chicago	U.S.	CMA's Share in Purchasing Power† (Per cent)
1940	59.1	59.9	5.64
1946	81.4	83.4	5.20
1947	94.5	95.5	5.27
1948	102.8	102.8	5.26
1949	102.7	101.8	5.22
1950	103.8	102.8	5.15
1951	111.9	111.0	5.16
1952	114.4	113.5	5.21
1953	115.4	114.4	5.20
1954	117.2	114.8	5.02
1955	117.9	114.5	5.04
1956	119.5	116.2	5.02
1957	123.3	120.2	5.04

*U.S. Department of Labor, Bureau of Labor Statistics. The Chicago index is for the City of Chicago. Both the city and the national series are on an "unrevised" basis.

†Ratio of civilian income in constant dollars in Chicago to corresponding total for the U.S.

1. The two-year period 1946-47, rather than a single year, is used as a base for post-war analysis because 1946 alone is somewhat atypical due to the fact that the transfer of war-time production to peace-time output had a relatively larger effect on Chicago than on the nation.

1947-49 purchasing power, U.S. personal income rose 39 per cent between 1946-47 and 1956-57 compared with a rise of 33.5 per cent for Chicago over the same decade. Chicago's share in total purchasing power of personal income fell from 5.24 per cent in 1946-47 to 5.03 per cent in 1956-57.[2] Annual data for Chicago's share in constant-dollar personal income and the relative movement of consumer prices in Chicago and the nation are shown in Table 51.

PER CAPITA PERSONAL INCOME

Over the post-war period, civilian personal income received in Chicago averaged 5.19 per cent of total income received in the continental United States. Chicago's average share in U.S. population during this period was 3.65 per cent; hence, on a per capita basis, income received in Chicago was 142 per cent of the national average.

The higher level of per capita income in Chicago is due to the same reasons as those which underlie higher output per capita: the larger proportion of population employed, the relatively favorable mixture of industries and occupations, and the higher-than-average wage levels in any given industry which are made possible by the higher levels of per-worker output. However, a larger than average fraction of Chicago's output is not received as personal income and the contribution to Chicago's income from sources other than production activity is somewhat lower than the national average. Because of these two factors the Chicago-U.S. differential in per capita personal income (42 per cent) is somewhat lower than the corresponding differential in per capita output (50 per cent).

The level of per capita civilian personal income in Chicago relative to the national average and the relative *real* per capita income in dollars of 1947-49 purchasing power are shown in

2. These calculations are based on the cost of living index for the city of Chicago, and assume that the relative *change* in metropolitan living costs parallelled those observed in the city.

Table 52. Between 1946-47 and 1956-57, per capita civilian personal income in the United States grew 55 per cent. In Chicago, it grew 53 per cent. Over the decade, *real* per capita income (in constant dollars), which is the ultimate measure of average individual standards of living in an area, grew 16.8 per cent in the nation as against 10.6 per cent in Chicago. If the pre-war year 1940 is used as a base, the decrease in differential between per capita incomes in Chicago and the nation is even more pronounced.

Table 52
Per Capita Civilian Personal Income in Current and Constant 1947-49 Dollars, CMA as Per Cent of U.S., 1940, 1946-57

	PERSONAL PER CAPITA INCOME				CMA AS PER CENT OF U.S. AVERAGES	
	Current dollars		Constant 1947-49 Dollars			Constant 1947-49
Year	CMA	U.S.	CMA	U.S.	Current Dollars	Dollars
1940	900	593	1,524	990	151.8	153.9
1946	1,697	1,209	2,085	1,450	140.4	143.8
1947	1,862	1,297	1,970	1,352	143.6	145.1
1948	2,006	1,400	1,952	1,362	143.3	143.3
1949	1,952	1,361	1,901	1,337	143.4	142.2
1950	2,099	1,471	2,022	1,431	142.7	141.3
1951	2,299	1,607	2,055	1,448	143.0	141.9
1952	2,362	1,667	2,065	1,477	140.8	139.8
1953	2,520	1,739	2,184	1,520	143.9	142.8
1954	2,430	1,723	2,073	1,501	141.0	138.1
1955	2,555	1,800	2,167	1,572	141.9	137.8
1956	2,661	1,895	2,226	1,631	140.4	136.5
1957	2,786	1,983	2,260	1,650	140.5	137.0

Sources: Tables 10, 50 and 51.

This decrease in per capita income differential is not confined to Chicago, but is part of a nation-wide tendency toward a greater equalization of per capita incomes, which has been going on steadily at least since 1929. Almost without exception, the regions with higher than national per capita incomes have experienced a relative decline since 1929 while regions with lower than national per capita incomes have experienced a relative rise. The rate of change in relative per capita positions of the various areas has been in almost direct proportion to the extent of the differen-

tials which existed in the base period, 1927-29.[3] The East North Central Region is the sole exception to this general trend. Per capita income in this region has been remarkably constant relative to the nation. It was 113 per cent of the national average in 1927-29, 113 per cent in 1940-41, and again 113 per cent in 1953-56.

The trend towards income equalization on a per capita basis has been especially marked since 1940, even when the data are examined on a state by state basis. The states which had the lowest per capital incomes in 1940 (e.g., Alabama, Mississippi and Arkansas) have since experienced the largest percentage gains in per capita income. The smallest percentage growth has occurred in states which had the highest per capita incomes in 1940 (e.g., Nevada and New York).[4]

THE COMPOSITION OF PERSONAL INCOME

There is considerable variation between Chicago's share in particular forms of personal income and its share in total civilian personal income. An examination of this structure can provide insights which are not available from an overall analysis of total income.

The first useful breakdown of the personal income total is into two parts: one part consisting of personal income derived from transfer payments, and the other part consisting of the remainder of personal income. The share of a region in transfer payments is not directly associated with its current productive activity or with the accumulated property rights of its residents. The remainder of income, which is referred to as "earned" income for want of a better name, does reflect economic activity. Chicago's share in transfer payments, which provide about 4 per cent of total personal income in Chicago, is considerably smaller than its share

3. For a discussion of this point see *Personal Income by States,* pages 24-25.

4. For all forty-nine areas, including Washington, D.C., the coefficient of rank correlation between percentage increases in per capita incomes from 1940-1956 and levels of per capita income in 1940 (inverted) is .94.

in "earned" income. Indeed, in most years, transfer receipts on a per capita basis are lower in Chicago than the national per capita average. This is due primarily to the fact that Chicago's population has a smaller proportion of retired persons who receive a large fraction of total transfer payments in society.

Chicago's share in "earned" income has averaged about 5.3 per cent of the corresponding U.S. total. This type of income can be divided into agricultural and nonagricultural income, and for purposes of metropolitan analysis it is useful to do so. Although Chicago's share in total earned income has been relatively constant, its share in nonagricultural income has declined steadily from around 5.8 per cent in 1946-47 to 5.5 per cent in 1956-57. This is due of course to the broad movement of persons from agriculture into other forms of economic activity.

Total nonagricultural income consists of three major components: labor income, which includes all civilian wage and salary receipts as well as other forms of labor income; proprietory income, which includes professional income from independent practice and business income of unincorporated enterprises; and property income, which includes personal receipts of dividends, interest, and rents. Chicago's changing share in these three components is shown in Table 53.

In 1940, Chicago's share in total nonagricultural labor income was 6.35 per cent. By the beginning of the post-war decade, this had declined to 6.12 per cent due largely to the dispersal of industry during the war and the development of manufacturing activity in the newer centers of the nation. The trend toward regional dispersal of industry has continued during the post-war decade, and by 1956-57, Chicago's share in labor income had declined to 5.71 per cent of the national total.

Non-farm proprietory income is a smaller component of nonagricultural income in Chicago than is true of the nation as a whole. This reflects the fact that a larger share of business activity in Chicago is organized in larger-scale corporate-owned establishments.

Chicago's share in property income receipts is of the same general magnitude as its share in total personal income. However, the property income share has behaved more erratically than the

other components of income. Since the property income series is based on less reliable evidence than the other estimates, the tendency towards erratic movements in this series might be the result of year to year errors in the many pieces of statistical evi-

Table 53

CMA Share in Various Classes of Personal Income, 1940, 1946-57

(CMA as per cent of U.S. totals)

Year	Civilian Personal Income	Transfer Payments	CIVILIAN EARNED INCOME* TOTAL	NONAGRICULTURAL ONLY† Total	Labor Income‡	Proprietory Income§	Property Income**
1940	5.56	4.24	5.62	6.05	6.35	5.44	5.33
1946	5.08	3.63	5.18	5.75	6.03	4.77	5.35
1947	5.21	3.82	5.31	5.86	6.12	4.70	5.55
1948	5.26	4.16	5.33	5.89	6.13	4.78	5.59
1949	5.27	3.42	5.39	5.84	6.09	4.74	5.49
1950	5.20	3.17	5.35	5.77	5.97	4.67	5.56
1951	5.20	3.33	5.30	5.73	5.93	4.67	5.63
1952	5.11	3.15	5.22	5.59	5.78	4.62	5.83
1953	5.25	3.34	5.35	5.68	5.86	4.60	5.63
1954	5.13	3.44	5.23	5.53	5.72	4.57	5.26
1955	5.17	3.34	5.30	5.56	5.76	4.59	5.22
1956	5.16	3.25	5.28	5.52	5.69	4.59	5.21
1957	5.18	3.30	5.30	5.53	5.73	4.60	5.17

Sources: U.S. Department of Commerce, Office of Business Economics, *Personal Income by States Since 1929; Survey of Current Business*, August 1957, August 1958; and Table 10 in this study.

*Total civilian personal income *less* transfer payments received.

†Excludes wages, salaries, and proprietory income originating in agriculture. One negligible element of agricultural income—other labor income of farm workers *less* personal contributions for social insurance paid by farmers—is included in the nonagricultural total because there is no basis for segregating these items.

‡Civilian nonagricultural wages and salaries and other labor income less personal contributions for social insurance.

§Professional income and income of non-farm unincorporated business.

**Rents, dividends, and interest.

dence on which it is based. However, the post-war rise in the series to 1952 and a decline since that year also reflects an underlying change in Chicago's share in accumulated financial assets. This phenomenon is examined at greater length in a subsequent chapter.

COMPARISONS WITH OTHER AREAS

It is useful to compare the level and composition of Chicago's income not only against the national average, but against other

areas which have similar economic characteristics to those found in Chicago.

The data for two other large metropolitan areas: New York and Philadelphia (which were prepared by the Department of Commerce for the Corps of Engineers), for the District of Columbia, and for selected states with very high levels of per capita income, are presented in Tables 54-59. Tables 54-55 show civilian personal income for these ten areas for 1940 and 1957 as well as the major components of "earned" income—namely: wages, salaries and other labor income; property income; and non-farm proprietory income. Tables 56-57 show the same data on a per capita basis and Table 58 shows these per capita measures expressed as a relative percentage of the national average.

Table 54
Population and Civilian Personal Income, CMA, U.S., and Selected Areas, 1940
(Population in thousands of persons, income in millions of dollars)

Area	Papulatian*	Total Civilian Persanal Incame†	Praperty Income	Nan-Farm Praprietary Income	Labar Income‡
Continental United States	131,669	78,081	12,709	8,442	49,841
Chicago Metropolitan Area	4,826	4,345	677	459	3,102
New York Metropolitan Area	11,661	11,107	2,450	1,210	7,170
Philadelphia Metropolitan Area	3,200	2,573	506	265	1,709
District of Columbia	663	798	152	69	553
Connecticut	1,709	1,562	340	123	1,053
Massachusetts	4,317	3,373	737	288	2,203
New Jersey	4,160	3,419	613	315	2,405
Michigan	5,256	3,606	446	334	2,593
Illinois	7,897	5,951	924	615	4,029
California	6,907	5,770	1,013	785	3,471

Sources: *U.S. Census af Populatian: 1940; Persanal Incame by States Since 1929; Survey af Current Business*, January 1959.

*As af census date.

†Adjusted to exclude military incame.

‡Cansists af civilian wages and salaries and other labor incame, befare adjustments far persanal cantributians far sacial insurance.

All ten areas are higher than average income areas. In 1940, per capita incomes ranged from 116 per cent of the U.S. average, for Michigan, to 203 per cent, for the District of Columbia. In terms of total per capita income, Chicago with an index of 152 per cent of the national average, ranked below the District of Columbia, the New York Metropolitan Area (161) and the State of Connecticut (154).

Table 55
Population and Civilian Personal Income, CMA, U.S., and Selected Areas, 1957
(Population in thousands of persons, income in millions of dollars)

Area	Population*	Total Civilian Personal Income†	Property Income	Non-Farm Proprietory Income	Labor Income‡
Continental United States	170,333	337,855	42,964	31,403	237,029
Chicago Metropolitan Area	6,277	17,490	2,223	1,440	13,385
New York Metropolitan Area	13,972	38,890	5,910	3,401	28,197
Philadelphia Metropolitan Area	4,163	9,783	1,354	801	7,187
District of Columbia	831	2,017	346	159	1,373
Connecticut	2,252	6,301	948	487	4,612
Massachusetts	4,866	11,159	1,783	786	7,540
New Jersey	5,627	13,899	1,645	1,242	10,403
Michigan	7,803	16,605	1,770	1,363	12,560
Illinois	9,637	23,338	2,713	1,995	17,158
California	13,922	34,014	4,667	3,534	23,479

Sources: *Survey of Current Business*, August 1958 and January 1959.

*Mid-year estimates from *Current Population Reports* (for states) and *Survey of Current Business*, January 1959 (for metropolitan areas except CMA).

†Adjusted to exclude military income.

‡Consists of civilian wages and salaries and other labor income, before adjustments for personal contributions for social inurance.

Table 56
Per Capital Civilian Personal Income, by Type, CMA, U.S., and Selected Areas, 1940
(Dollars)

	Total Civilian Personal Income	Property Income	Non-Farm Proprietory Income	Labor Income
Continental United States	592	97	64	378
Chicago Metropolitan Area	900	140	95	643
New York Metropolitan Area	953	210	103	615
Philadelphia Metropolitan Area	804	158	83	534
District of Columbia	1,203	229	104	834
Connecticut	914	199	72	616
Massachusetts	781	171	67	510
New Jersey	822	147	76	578
Michigan	686	85	64	493
Illinois	754	117	78	510
California	835	147	114	503

Source: Table 54.

In 1957, the income differential between those areas and the U.S. average had closed noticeably relative to 1940. Without exception, relative indexes of per capita income for all areas shown in the tables declined between 1940 and 1957—another

Table 57
Per Capita Civilian Personal Income, by Type, CMA, U.S., and Selected Areas, 1957
(Dollars)

	Total Civilian Personal Income	Property Income	Non-Farm Proprietory Income	Labor Income
Continental United States	1,983	252	184	1,392
Chicago Metropolitan Area	2,786	354	229	2,132
New York Metropolitan Area	2,783	423	243	2,018
Philadelphia Metropolitan Area	2,350	325	192	1,726
District of Columbia	2,427	416	191	1,652
Connecticut	2,798	421	216	2,048
Massachusetts	2,293	366	162	1,550
New Jersey	2,470	292	221	1,848
Michigan	2,128	227	175	1,609
Illinois	2,421	282	207	1,780
California	2,443	335	254	1,686

Source: Table 55.

Table 58
Per Capita Civilian Personal Income, by Type, CMA and Selected Areas, 1940 and 1957
(Per cent of U.S. averages)

		Total Civilian Personal Income†	Property Income	Non-Farm Proprietory Income	Labor Income‡
Continental United States	1940-1957	100	100	100	100
Chicago Metropolitan Area	1940	152	144	148	170
	1957	140	140	124	153
New York Metropolitan Area	1940	161	216	161	163
	1957	140	168	132	145
Philadelphia Metropolitan Area	1940	136	163	130	141
	1957	118	129	104	124
District of Columbia	1940	203	236	162	221
	1957	122	165	104	119
Connecticut	1940	154	205	112	163
	1957	141	167	117	147
Massachusetts	1940	132	176	105	135
	1957	116	145	88	111
New Jersey	1940	139	151	119	153
	1957	125	116	120	133
Michigan	1940	116	88	100	130
	1957	107	90	95	116
Illinois	1940	127	121	122	135
	1957	122	112	112	128
California	1940	141	151	178	133
	1957	123	133	138	121

Sources: For sources and footnotes see Tables 54-57.

piece of evidence of the steady equalization of income which has been taking place between areas in this nation. The relative indexes of the ten areas in 1957 ranged from Michigan (107) to Connecticut (141). Chicago ranked second at 140 per cent of the national average, just behind Connecticut and just ahead of the New York Metropolitan Area. The District of Columbia's index fell sharply from 203, in 1940, to 122, in 1957, due partly to the relative stability of incomes derived from government and partly to the movement of working population to residential areas outside district limits.[5] The latter effect, in reverse, is partly responsible for the rise in per capita incomes in Connecticut, many of whose residents are employed within the New York Area.

Per capita variations in the property and labor income components of personal income are as interesting as variations in the total. Non-farm proprietory income reflects the relative dominance within each area of the corporate form of organization; and area differences in this component are not particularly important in the present context.

The importance of property income as a source of personal income varies considerably between areas. In 1940, average per capita property income in the District of Columbia was more than twice the national per capita average for this form of income. The same was true of the New York Metropolitan Area which had a per capita property income index of 216 in 1940. Connecticut (205) and Massachusetts (176) were also very high property income states. Chicago, with an index of 144 per cent of the national average, was below these leading areas and also below the Philadelphia Metropolitan Area, New Jersey, and California. Chicago's share in total property income was also lower than its share in total income—a characteristic which appears to be common to most areas of the country outside the eastern seaboard, with the notable exception of California. Even very high income areas like the Chicago Area require a considerable time in order to accumulate the amount of wealth and property required to generate a level of property income which is commensurate with the relative level of direct production income in such areas.

5. Personal incomes are computed by place of residence and not by place of work.

The relative property income proportions changed noticeably between 1940 and 1957. Per capita property income in those areas like the District of Columbia, New York, Massachusetts, and Connecticut which had very high relative indexes of property income in 1940 declined relative to the national average. Chicago's index also declined somewhat but not as rapidly as its index of total income. By 1957, after a seventeen-year period of saving and wealth accumulation, Chicago's share in property income (140) was commensurate with its share in overall personal income (140), probably for the first time in its history. However, compared against the high property income areas, Chicago's per capita property income receipts were still below those in New York (168), the District of Columbia (165), Connecticut (167), and Massachusetts (145).

Excluding property income, Chicago's relative per capita position in all other forms of earned income is higher than all other leading industrial areas in the country. This was true both in 1940 and 1957. However, in 1940, the District of Columbia with its very high concentration in salaried government employment, had a higher per capita income than Chicago.

In terms of labor income alone, Chicago's per capita position was 70 per cent above the national per capita average in 1940. This differential in per capita labor income declined to 53 per cent in 1957, but was significantly above the level of per capita labor income received in all states and also above other leading areas like the New York Metropolitan Area (145), Connecticut (147), New Jersey (133), and the Philadelphia Metropolitan Area (124).

Chicago's per capita income position relative to all other large metropolitan areas cannot be measured because comparable income data for metropolitan areas other than those analyzed in this chapter do not exist. However, evidence on median family incomes in 1949, collected in the 1950 population census, indicates that Chicago area incomes are among the highest, if not the highest, of all major metropolitan areas in the United States. The relative rankings of the 14 largest metropolitan areas in terms of median 1949 family income are shown in Table 59.

Table 59
Median Family Income in 1949, Fourteen Large Metropolitan Areas

Standard Metropolitan Area	*Dollars*	*Per Cent of U.S. Median*
U.S. Median family income	3,073	100.0
District of Columbia	4,262	138.7
CHICAGO	**4,063**	**132.2**
Detroit	3,976	129.4
San Francisco	3,935	128.1
Cleveland	3,895	126.8
Minneapolis-St. Paul	3,776	122.9
New York	3,695	120.2
Los Angeles	3,650	118.8
Buffalo	3,494	113.7
Philadelphia	3,416	112.8
St. Louis	3,383	110.1
Baltimore	3,355	109.2
Pittsburgh	3,344	108.8

Source: U.S. Bureau of the Census, *Census of Population 1950*, Vol. II, Part 1.

Chapter 9

PERSONAL TAXES, EXPENDITURES, AND SAVING

The sources of metropolitan personal income are easier to measure than the uses of this income for taxes, consumer expenditures, and saving. The availability of county estimates for wage and salary disbursements and of state estimates for other forms of income provide a very large portion of the factual basis required for estimating metropolitan personal income. In contrast, there is little direct evidence by which personal tax payments and expenditures on goods and services can be estimated at the metropolitan level so that they tie in with national totals. At best, the uses of metropolitan income can be measured only approximately and only for selected years. In spite of the statistical limitations to which such estimates are subject, some measurement of the flow of metropolitan income to taxes, expenditures, and saving must be made because it provides an essential link in our understanding of the metropolitan market for goods, services, and financial assets.

PERSONAL TAXES AND DISPOSABLE INCOME

The first broad use of personal income is for personal taxes paid to federal, state, and local governments. In the national income accounts personal taxes as opposed to business taxes, are defined as those taxes which are levied against individuals, their

income, or their property, and which are not deductible as business expenses. In addition to taxes proper, certain non-tax payments by individuals such as licensing fees, fines, and penalties are also deducted from personal income in arriving at an estimate of after-tax, or "disposable personal income."

Official estimates of personal taxes and disposable income are available on a regular and detailed basis for the nation as a whole. Because of statistical difficulties, corresponding estimates of personal taxes and disposable income for individual states are available in considerably less detail and only for selected years. These state estimates are based on personal income-tax data supplied by the U.S. Treasury Department and the statistics on revenues of state and local governments compiled by the Bureau of the Census.[1]

For purposes of this study, estimates of personal tax payments and personal disposable income for the Chicago Area were constructed for three selected years, 1940, 1950, and 1955. In the absence of actual local tabulations of taxes paid by Chicago residents, it was necessary to make these estimates through the use of available relationships between different levels of gross personal income per household and net taxes per household.[2] Estimates of personal taxes paid by Chicago residents and of disposable personal income remaining after taxes in 1940, 1950, and 1955 are shown in Table 60.

The largest part of direct personal taxes, as these are defined in the national income accounts, goes to the Federal Government. State and local governments derive the bulk of their revenues from indirect business taxes, which are not charged against personal income in deriving disposable personal income estimates.

In 1955, personal taxes paid to the Federal Government amounted to 10.30 per cent of total personal income in the U.S. The corresponding ratio for Chicago was 11.74 per cent—a result of the higher levels of income in the area and the progression in the Federal income tax structure. On a per capita basis Federal personal taxes paid by Chicago residents were 58 per cent higher

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1. For a discussion of state estimates see *Personal Income by States*, pp. 29-33.
2. Ideally the calculation should be based on net taxable income per tax-return, but the basic data required for such an approach are not available.

in 1955 than corresponding per capita taxes in the U.S. as a whole —303 dollars per capita in Chicago versus 192 dollars per capita for the nation. Since per capita personal income in Chicago in 1955 was 140 per cent of the national per capita average, Chicago's share in disposable personal income in the U.S. is somewhat lower than its share in total personal income.[3]

Table 60
Personal Taxes and Disposable Personal Income, CMA, 1940, 1950, 1955
(Millions of dollars)

	1940		1950		1955	
Civilian Personal Income	4,345		11,533		15,325	
Military Income	7		78		146	
Total Personal Income		4,352		11,611		15,471
Federal Taxes	130		1,200		1,816	
State and Local Taxes	22		30		139	
Total Personal Taxes		152		1,230		1,955
Disposable Personal Income		4,200		10,382		13,516
As Per Cent of Continental U.S.	5.53		5.07		5.04	
Disposable Income As Per Cent of Total Personal Income						
Chicago	96.5		89.4		87.4	
U.S. Average	96.7		90.8		88.4	

Source: Technical Appendix.

Direct personal tax payments to state and local governments in 1955 amounted to 1.4 per cent of total U.S. personal income, but only to 0.9 per cent of Chicago's personal income—a result of the relatively smaller use of this form of taxation by state and local governments in Illinois and Indiana. Thus, in spite of the higher level of income prevailing in Chicago, per capita direct personal tax payments to state and local governments in 1955 were somewhat lower for Chicago than the national average—23 dollars per capita in Chicago as against 26 dollars per capita in the U.S.

An estimate of the various ways in which individuals spend or save their personal after-tax income, is an important tool of

3. The per capita personal income differential of 140 per cent includes military income. It differs from the differential of 141.9 shown earlier, which excluded income from military sources.

analysis both for national and local markets for goods, services, dwelling units, and financial assets. Official data furnished by the Department of Commerce and the Securities and Exchange Commission provide a virtually complete accounting for these flows at the national level. However, there are no comparable data on personal consumption expenditures and personal saving on a less than national basis. Partial evidence on consumer acquisitions of goods, services, and net financial assets does exist for local areas but only in the form of data collected in the periodic censuses of retail trade, selected services, population, and housing, and in balance-sheet data of certain forms of local financial institutions. These data can be combined into local estimates of total consumer expenditures and savings, which are comparable in concept to national statistics; however, such measures are possible only for selected years, and at best they represent relatively crude estimates of the categories being measured. In spite of these statistical limitations, local estimates of consumer expenditures and saving provide insights into the metropolitan economy which are not available from an analysis of personal income alone.

The use of metropolitan sales and financial asset data as a basis for estimating consumer expenditures and savings at the local level, is subject to an important limitation. Some part of local sales are to non-residents of the area being studied; and a certain amount of consumer expenditures by residents are made outside the area. By the same token a portion of the financial assets held at local institutions is owned by people from outside the area; and residents of the area own financial assets in institutions located elsewhere. To the extent that these various flows do not completely offset each other, an unknown margin of error exists in estimates of local expenditures and savings derived on the basis of local sales and asset information.

A second difficulty in estimating consumer expenditures on the basis of sales data arises from the fact that some portion of local sales represents business rather than consumer purchases of goods and services. This difficulty also exists at the national level. The official estimates of consumer expenditures contained in the national income accounts adjust for this problem by allocating output and sales data, item by item, between business and

consumer purchases. This is done on the basis of evidence available for the nation as a whole, but not for particular areas within the nation. In the absence of this information, it is necessary to assume that the local relationship between sales and other data, on the one hand, and net consumer purchases, on the other, is the same for each class of expenditure as the national relationships used in allocating purchases between business and consumers. Estimates of local consumer expenditures based on such an assumption will, of course, reflect any error in the assumption itself. However, it is unlikely that a serious overall margin of error arises from this source.

Abstracting from these two potential sources of error, the metropolitan estimates of consumer expenditures tie-in fairly closely with the annual and quarterly estimates available at the national level, because for the most part, they are based on the same sources of primary data. Such local estimates are reliable enough for use as a broad measure of the absolute and relative size and composition of metropolitan consumer expenditures. However, the *joint* use of local estimates of disposable personal income and of consumer expenditures as a basis for estimating metropolitan personal saving is subject to a potentially wider margin of error. This is so because only a small fraction of personal income is saved, and hence relatively small margins of error in either of the totals (especially if they are in opposite directions) can lead to a much larger percentage error in the estimate of personal saving derived by subtracting the expenditure estimate from the estimate of disposable personal income. The results obtained from such a procedure cannot be accepted unless they can be checked by independent estimates of the proportion of disposable personal income saved in the area. Fortunately such an independent check of personal savings is possible through the use of data on financial and housing assets accumulated in the Chicago Area.

The estimates of consumer expenditures in the Chicago Area are shown in Table 61. Both the level and the pattern of expenditures in Chicago differs from the U.S. average. Because of higher per capita income, per capita consumer expenditures on goods and services is also higher in Chicago—2,065 dollars per capita

in 1955 as against a national average of 1,548 dollars. However, this difference in per capita consumer expenditures is smaller than the difference prevailing in the level of per capita disposable income received in the two areas. Thus, in 1955 per capita income was 40 per cent above the U.S. average but per capita expenditures were only 33 per cent higher. The same general relationship was true in 1950. Both observations accord with the general findings, based on budget studies, that *in any given period* groups or communities with relatively high incomes tend to save a larger proportion of their income than relatively low income groups. Although Chicago residents spend a larger absolute amount than the U.S. per capita average, they spend a smaller proportion of their disposable income.

Table 61
Personal Consumption Expenditures, CMA, 1950 and 1955

	CMA Expenditures (Millions of dollars)		*Per Cent of U.S. Total*	
	1950	*1955*	*1950*	*1955*
Total Consumption Expenditures	9,343.7	12,385.2	4.816	4.868
Goods	5,887.6	7,411.4	4.564	4.586
Services	3,456.1	4,973.8	5.314	5.359
Goods:				
Food Produced and Consumed on Farms	6.6	6.3	0.347	0.397
New Cars and Net Purchases of Used Cars	385.9	543.3	3.830	3.762
All Other Goods	5,495.1	6,861.8	4.714	4.756
Services:				
Personal Services	313.7	348.3	6.320	5.443
Housing	1,187.1	1,919.0	5.559	6.167
Household Operations	369.0	555.8	4.436	4.411
Medical Care and Death Expenses	346.7	470.3	4.703	4.619
Personal Business	418.9	605.9	5.120	4.746
Transportation	339.0	426.6	5.815	5.700
Recreation, Education, Religious, and Welfare	481.7	647.9	5.346	5.287

Sources: U.S. Department of Commerce, Office of Business Economics, *National Income Supplement*, 1954 ed., *Survey of Current Business*, July 1957, and Technical Appendix.

The allocation of expenditures between goods and services in Chicago also differs from the average U.S. pattern. A much higher fraction of total spending in Chicago goes towards the purchase of services than is true of the nation as a whole. In 1950 for example, 37 per cent of Chicago expenditures was for services against 33.5 per cent of U.S. expenditures. In 1955, services absorbed a higher fraction of total spending both in Chicago and in the U.S., but the ratio of service expenditures to total expendi-

tures in Chicago (40 per cent) was again 3.5 percentage points higher than the national ratio (36.5 per cent). These findings are also supported by evidence collected in budget studies conducted by the U.S. Department of Labor.[4]

On a per capita basis, expenditures on services in Chicago in 1950 and 1955 were 46 per cent and 47 per cent, respectively, above U.S. per capita averages. Within the service sector, this differential in per capita expenditures is largest for expenditures on housing and personal services and smallest for expenditures on household operations and for medical care and death expenses.

The level of per capita expenditures on goods in Chicago is also higher than the national average, but the differential, 26 per cent, is considerably smaller than the 47 per cent differential in service expenditures. The tendency of Chicago residents to allocate a smaller proportion of their income on goods is particularly marked in the case of net expenditures on new and used cars. In this category, per capita expenditures in Chicago Area were only 3 per cent higher than national per capita expenditures on these items.

Personal saving is the difference between personal disposable income and total expenditures on consumption. The standard definition of consumer expenditures used by the Department of Commerce consists of all expenditures made by individuals as consumers, valued at current market prices; it includes expenditures on new automobiles and net purchases of used automobiles, but it excludes expenditures on new homes and permanent alterations and additions to the existing stock of housing. However, there are alternative definitions of consumption and saving, which classify an increase in the stock of automobiles owned by consumers as a component of personal savings rather than as a component of consumption.[5] The data in Table 62 show personal saving estimates for Chicago and the U.S. on the basis of both the standard definition and the alternative definition.

Using the standard definition, Chicago residents saved 1038 million dollars in 1950 or 10 per cent of their personal disposable

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4. See U.S. Department of Labor, Bureau of Labor Statistics, *Survey of Consumer Expenditures in 1950* and University of Pennsylvania, Wharton School of Finance, *Study of Consumer Expenditures, Income and Savings.*

income and 1131 million dollars in 1955 or 8.4 per cent of personal disposable income. For the U.S. as a whole, individuals saved 5.9 per cent of their personal disposable income in each of these two years. The *rate* of saving out of disposable income in Chicago was 69 per cent higher than the average U.S. rate in 1950 and 42 per

Table 62
Personal Saving Data, CMA and U.S., 1950 and 1955

	CMA		U.S.		CMA as Per Cent of U.S.	
	1950	1955	1950	1955	1950	1955
	(Millions of dollars)		(Billions of dollars)			
Total Personal Disposable Income	10,382	13,516	206.1	270.2	5.03	5.00
STANDARD DEFINITION						
Total Consumer Expenditure	9,344	12,385	194.0	254.4	4.82	4.87
Total Personal Savings	1,038	1,131	12.1	15.8	8.58	7.16
ALTERNATIVE DEFINITION						
Total Consumer Expenditure	9,016	11,980	185.4	243.7	4.86	4.92
Total Personal Savings	1,366	1,536	20.7	26.5	6.60	5.80
	(Dollars)		(Dollars)			
Per Capita Disposable Income	1,882	2,253	1,363	1,645	138	137
STANDARD DEFINITION						
Per Capita Consumer Expenditures	1,694	2,065	1,283	1,548	132	133
Per Capita Personal Savings	188	188	80	97	234	194
Per Cent of Income Saved	10	8.4	5.9	5.9	169	142
ALTERNATIVE DEFINITION						
Per Capita Consumer Expenditures	1,635	1,997	1,226	1,483	133	135
Per Capita Personal Savings	248	256	137	162	182	158
Per Cent of Income Saved	13.2	11.4	10	9.8	132	116

cent higher in 1955. Since per capita disposable incomes were about 38 per cent above the U.S. average in these two years, the dollar volume of per capita savings in Chicago was more than *twice* the U.S. per capita volume in 1955. Stated in terms of Chicago's share in the U.S. economy, Chicago had 3.65 per cent of total U.S. population in 1950, received 5.03 per cent of national disposable income, and generated 8.58 per cent of the total flow of personal saving as this is defined by the Department of Commerce. In 1955, Chicago had 3.69 per cent of population, 5.00 per cent of disposable income, and generated 7.16 per cent of total personal saving in the nation.

Even if the ratio of saving to income were constant for all

5. See Raymond W. Goldsmith, *A Study of Saving in the United States*, (Princeton: Princeton University Press, 1955).

levels of income, the higher per capita incomes prevailing in Chicago would tend to generate a higher level of per capita saving in Chicago. In practice, the rate of saving tends to increase with the level of income.[6] Thus higher per capita incomes have a two-fold effect in raising the relative level of saving in Chicago above the U.S. average. However, the extremely high ratio of saving to income in Chicago relative to the national average is partly due to the classification of net automobile purchases as an item of consumer expenditures. This is so because a much smaller portion of disposable income in Chicago is used in the acquisition of new and used automobiles as compared to the nation as a whole. This becomes clear when saving estimates based on the alternative definition of consumer expenditures are examined. This alternative definition classifies a net increase in consumers' equity in automobiles as an item of saving rather than of consumption, and on this basis the differential between Chicago's ratio of saving to income and the average U.S. ratio is not as high as it is when the standard definition of consumption and saving is used. If personal saving is defined to include automobiles, the *rate* of saving out of income in Chicago was 132 per cent of the national average in 1950 and 116 per cent in 1955. However, even on the basis of the alternative definition Chicago generated 6.6 per cent of total personal saving in 1950 and 5.8 per cent in 1955. On a per capita basis the volume of personal saving in Chicago was 82 per cent above the U.S. average in 1950 and 58 per cent above average in 1955.

By either definition the data suggest that Chicago generates a very substantial portion of total personal saving in the nation. Is this conclusion valid or does it result at least in part from nonoffsetting statistical errors in the metropolitan estimates of disposable income and consumer expenditures? The very nature of such a question precludes a precise answer, but almost all considerations seem to indicate that any error in the saving estimates for Chicago is an error of underestimation rather than the other way around.

Two potential sources of error in the estimate of consumer ex-

6. This relationship applies to different income levels at a given point in time. Secular changes in the income levels do not appear to bring forth higher saving ratios when the data are examined over long periods of time.

penditures were mentioned earlier in this chapter. One source is the assumption that net expenditures by Chicago residents outside Chicago (exclusive of foreign travel expenditures, which are estimated separately) is equal to net expenditures by non-residents in the Chicago Area. If this assumption is wrong, the chances are very high that it is wrong because expenditures by non-residents in the Chicago Area are larger than expenditures by Chicago residents elsewhere. In other words, the assumption used tends to overstate metropolitan consumption and to understate metropolitan saving.

The same is true of the second assumption—that the ratio of consumer purchases to non-consumer purchases in the Chicago Area is the same as the national ratio. This assumption is also likely to lead to an overstatement of metropolitan consumer expenditures because a larger fraction of goods, and especially of professional services sold in the metropolitan area is likely to represent business purchases, not only by firms located in the area itself but by businesses in the surrounding territory.

Finally, the estimate of personal saving, derived by subtracting consumer expenditures from disposable personal income, can be checked by an independent estimate of saving measured as the net accumulation of financial and permanent physical assets owned by individuals in the Chicago Area. This approach confirms the conclusions of the present analysis: that the rate of per capita saving in Chicago is markedly higher than the corresponding U.S. average and that a very high proportion of total personal savings in the nation originates in the Chicago Area.

Chapter 10

THE FLOW OF SAVING

Saving can also be measured in terms of specific assets accumulated by individuals. In addition to providing an independent check on the estimate of personal saving measured as the difference between personal disposable income and consumer expenditures, this alternative approach provides insights into the composition of individual saving in Chicago relative to the nation.

Personal saving, as defined by the Department of Commerce, is equivalent to total non-corporate saving. Such saving may take place in a variety of ways, but for present purposes, it is as useful to think of it as consisting of three broad categories. These are:

1. A net increase in financial assets owned by individuals. This category includes currency, bank deposits, postal savings deposits, savings and loan shares, policy reserves in life insurance and government savings bonds (collectively referred to as liquid saving); as well as various security holdings. Gross accumulation through these forms must be reduced to a net basis by subtracting increases in consumer debt to financial institutions.

2. A net increase in the value of residential housing owned by individuals. This is equal to the gross addition to the stock of consumer owned housing less the increase in mortgage debt owed by individuals to financial institutions and less an allowance for the loss of housing values attributable to depreciation of existing dwelling units.

3. The third category of personal saving consists of increases in the equity owned by individuals in unincorporated enterprises and farms. This last item comprises a large number of partially offsetting asset and liability items: changes in the stock of build-

ings, equipment, and inventories held by farms, unincorporated businesses, and non-profit institutions; depreciation on existing plant and equipment; and the net increase in long-term and short-term business indebtedness of these groups to corporations and financial institutions.

Even at the national level separate estimates of each of these categories of personal saving do not add up exactly to the estimate of personal saving derived by subtracting consumer expenditures from personal disposable income. However, there is a relatively close correspondence between the level of savings measured in these two alternative ways as well as in year to year movements in these levels.

Not all of the various forms of saving can be measured on a regional or metropolitan area basis. Within the financial category of saving, there is very little evidence on changes in individual holdings of currency or marketable securities. However, the other forms of financial asset accumulation, which account for between 70 and 80 per cent of total financial saving, can be estimated reasonably accurately at the metropolitan level. Offsets to saving on account of increases in consumer debt owing to commercial banks can be measured, but local evidence on consumer debt owing to other institutions is not available.

The second category of saving—increases in individual equity in housing—can also be measured only partially for metropolitan areas. Evidence is available on the value of new dwelling units built, and on net changes in individual mortgage indebtedness. However, there is little evidence on the value of alterations and additions made to existing dwelling units and on the decrease in the value of such units on account of depreciation.

The third category of personal saving cannot be measured at all at the metropolitan level. However, net accumulation through these asset channels has been relatively small over the post-war period. For example, in 1955 net accumulation through such assets amounted to less than 6 per cent of total personal saving in the United States.

Chicago's share in the regionally identifiable forms of personal saving is shown in Table 63. These data confirm the earlier findings that Chicago residents contribute a very high share of total

personal saving in the U.S. During the first five year period of the post-war decade, Chicago's share in identifiable financial savings was 9.0 per cent of the national total. However, the level of resi-

Table 63
The Flow of Individual Saving, CMA and U.S.
(Millions of Dollars)

NET INCREASES IN SELECTED ASSETS	1946-50			1950-55		
	CMA	U.S.	CMA Share (Per cent)	CMA	U.S.	CMA Share (Per cent)
A. Time and Savings Deposits						
Commercial Banks	737	5,289	13.9	706	11,087	6.4
Mutual Savings Banks	—	4,661	0	—	8,111	0
Postal Savings	49	438	11.2	(88)*	(1,089)*	—
TOTAL	786	10,388	7.6	618	18,109	3.4
B. Savings and Loan Share Capital	491	6,627	7.4	1,418	18,200	7.8
TOTAL A and B	1,277	17,015	7.5	2,036	36,309	5.6
C. Private Insurance Reserves	1,100	16,200	6.8	1,131	20,500	5.5
D. U.S. Savings Bonds (Series E and H only)	96	(1,600)*	—	160	2,100	7.6
E. Credit Unions: Shares and Deposits	36	570	7.2	99	1,738	6.4
F. Less Consumer Debt†	314	7,795	4.0	258	7,114	3.6
TOTAL A-F	2,195	24,390	9.0	3,168	53,533	5.9
G. New Dwelling Units Built	1,453	35,032	4.1	3,092	57,334	5.4
H. Less Mortgage Debt‡	1,033	26,206	3.9	1,905	41,539	4.6
TOTAL G and H	420	8,826	4.8	1,187	15,795	7.5
GRAND TOTAL	2,615	33,216	7.9	4,355	69,328	6.3

*Decrease in period.
†Consumer Debt to banks only.
‡Mortgage debt on private residential property held by banks, life insurance companies, and savings and loan associations only.
Source: Table 64 and Technical Appendix.

dential construction in Chicago was relatively low during the period 1946-50, and net identifiable savings of Chicagoans through this medium was below 5.0 per cent of the national total of such saving. Taking both forms of saving together, Chicago's share during the period 1946-50 was approximately 8.0 per cent of total U.S. saving. This represents a per capita saving rate more than twice as high as average U.S. per capita rates.

During the second five year period of the post-war decade,

Chicago's share in total identifiable saving declined from 7.9 per cent to 6.3 per cent of the U.S. total. The broad composition of saving in Chicago also changed fairly markedly between 1946-50 and 1951-55. Chicago's share in identifiable financial saving, hereafter referred to as liquid saving, declined from 9.0 per cent to 5.9 per cent. On the other hand, residential construction in Chicago increased more rapidly than in the nation and Chicago's share in this form of saving rose from 4.8 per cent to 7.5 per cent of national totals. A detailed analysis of these two broad forms of saving is taken up in the succeeding sections of this chapter.

SAVING THROUGH FINANCIAL ASSETS

Table 64 shows the volume of liquid assets held by Chicago residents at the end of 1945, 1950, 1952, and 1955 and Chicago's share within total U.S. holdings in each of seven categories of assets. In addition to these forms of asset accumulations, individuals save by increasing their holdings of marketable securities,

Table 64
Financial Assets of Individuals, CMA and CMA Share in U.S.†
(Millions of Dollars)

SELECTED ASSETS*	1945 CMA	1945 CMA Share (Per cent)	1950 CMA	1950 CMA Share (Per cent)	1952 CMA	1952 CMA Share (Per cent)	1955 CMA	1955 CMA Share (Per cent)
A. Time and Savings Deposits								
Commercial Banks	1,656	5.59	2,393	6.85	2,715	6.95	3,099	6.73
Mutual Savings Banks	—	0	—	0	—	0	—	0
Postal Savings	230	8.66	280	9.03	243	9.25	192	9.56
Total	1,886	3.96	2,673	4.61	2,958	4.60	3,291	4.32
B. Savings and Loan Share Capital	406	5.51	897	6.41	1,283	6.69	2,315	7.19
C. Private Insurance Reserves	2,402	6.21	3,502	6.38	3,936	6.29	4,633	6.19
D. U.S. Savings Bonds (Series E and H only)	1,672	5.05	1,768	5.62	1,710	5.61	1,928	5.74
E. Credit Unions: Shares and Deposits	37	9.21	73	8.06	103	7.55	172	7.03
TOTAL	6,402	5.03	8,912	5.59	9,990	5.62	12,338	5.62

*Data are for December 31.
†Continental U.S. only.
Source: Technical Appendix and *Statistical Abstract of the United States.*

either directly or through personal trust funds, pension funds, and mutual investment companies.[1] However, estimates for these forms of saving are not available at the metropolitan level.

Since World War II, Chicago residents have increased their holdings of the seven forms of assets shown in Table 64 at a faster rate than the rest of the nation. In 1945, Chicagoans held $6.4 billion in the form of these liquid assets. Over the ten year period 1945 to 1955, these holdings increased to $12.3 billion—an increase of 92.0 per cent. During this period, corresponding totals for the U.S. rose from $127.2 billion to $219.7 billion—a rise of 73.0 per cent. Thus, Chicago's share in the ownership of these assets rose from 5.0 per cent in 1945 to over 5.6 per cent in 1955.

Over the period as a whole, Chicago's share in all forms of liquid assets, with the exception of shares and deposits at credit unions, increased. The largest relative increase took place in individual holdings of share capital at savings and loan associations. In Chicago, this form of asset increased nearly six-fold over the post-war decade; the corresponding increase for the U.S. as a whole was approximately four and a half-fold. Chicago's share in this form of asset rose from 5.5 per cent to 7.2 per cent.

Chicago's share in time and savings deposits held at commercial banks increased very rapidly during the early years of the post-war decade, rising from 5.6 per cent in 1945 to nearly 7.0 per cent in 1952. However, since 1952 there has been a steady decline in Chicago's share in this form of assets.

Postal savings deposits, both in the nation as a whole and in Chicago, have been decreasing since 1949. The decrease has been less rapid in Chicago than in the nation, and the share of Chicagoans in this form of asset increased steadily from 8.5 per cent in 1945 to almost 10.0 per cent of the national total in 1955.

The share owned by Chicagoans in policy reserves of life insurance companies has remained fairly close to 6.2 per cent of the U.S. total over the post-war decade. Holdings of U.S. Series *E* and *H* bonds in Chicago have increased relative to the nation, from 5.0 per cent at the end of World War II to 5.75 per cent in 1955.

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1. Increases in federal, state and local retirement funds are not counted as part of individual saving in the national income accounts.

In 1945, credit unions in Chicago accounted for over 9.0 per cent of total credit union shares and deposits in the U.S. With the rapid increase in this form of financial intermediary in other parts of the country, particularly in California, Chicago's share has declined steadily to 7.0 per cent in 1955.

Per Capita Liquid Assets. It is useful to examine the volume, and changes in the volume of liquid asset holdings on a per capita basis for Chicago relative to the nation. This is done in Table 65. In 1945, per capita asset holdings in Chicago were 139.0 per cent of U.S. average per capita holdings. This difference was almost identical to the differential in average per capita personal income between Chicago and the nation (140.0 per cent). Per capita holdings of individual assets in Chicago vary from zero, in the case of deposits at mutual savings banks, which do not exist in the Chicago Area, to 237.0 per cent of the U.S. average in the case of postal savings. Per capita holdings of time and savings deposits at commercial banks were 154.0 per cent of the U.S. average in 1945, but if deposits at commercial banks, mutual savings banks, and postal savings depositories are treated as a single category, average per capita holdings in Chicago were only 9.0 per cent higher than the U.S. average per capita holdings of these assets in 1945. This differential is considerably lower than the difference between per capita income in the two areas.

Table 65
Per Capita Holdings of Financial Assets, CMA and U.S., 1945, 1955

SELECTED ASSETS	CMA		U.S.		CMA As Per Cent of U.S.	
	1945*	1955†	1945*	1955†	1945*	1955†
	(Dollars)		(Dollars)		(Per cent)	
A. Time and Savings Deposits						
Commercial Banks	325	517	211	280	154	185
Mutual Savings Banks	0	0	109	171	0	0
Postal Savings	45	32	19	12	237	267
Total	370	549	339	463	109	119
B. Savings and Loan Share Capital	80	386	52	196	154	197
C. Private Insurance Reserves	471	773	275	459	171	168
D. U.S. Savings Bonds (Series E and H only)	328	321	235	204	140	157
E. Credit Unions: Shares and Deposits	7	29	3	15	233	193
TOTAL	1,257	2,058	904	1,337	139	154

*Based on July, 1946, population estimates.
†Based on July, 1955, population estimates.

From 1945 to 1955, relative per capita holdings of assets grew more rapidly than relative per capita income. Per capita income in Chicago was 140.0 per cent of the U.S. average in 1945 and 142.0 per cent in 1955. In contrast, per capita asset holdings in Chicago grew from 139.0 per cent of the U.S. average to 154.0 per cent in 1955. Except for assets held at credit unions, which declined from 233.0 per cent of the U.S. average in 1945 to 193.0 per cent of the U.S. average in 1955, and per capita ownership of life insurance policy reserves, which remained relatively constant at around 170.0 per cent of average U.S. holdings of this asset, per capita holdings of all other assets in Chicago grew faster than corresponding holdings in the U.S.

It is useful to relate liquid asset holdings to the level of personal income. At the end of 1945, Chicagoans held 74 cents in the form of liquid assets for each dollar of civilian personal income received in 1946. By the end of 1955, this had risen to 77.3 cents per dollar of income received in 1956. The corresponding figures for the U.S. were 75 cents and 70.5 cents respectively.

Composition of Liquid Asset Holdings. Liquid asset holdings in Chicago differ from the national pattern of such holdings in structure as well as level. Table 66 shows the composition of holdings in Chicago in 1945 and 1955 against corresponding data for the U.S. Most of the difference between the two structures shown in Table 66 is accounted for by the fact that Chicago has no mutual savings banks. These institutions hold about 12.5 per

Table 66
Composition of Financial Asset Holdings, CMA and U.S., 1945, 1955
(Per cent)

SELECTED ASSETS	CMA		U.S.	
	1945	*1955*	*1945*	*1955*
A. Time and Savings Deposits				
Commercial Banks	25.9	25.1	23.3	20.9
Mutual Savings Banks	0	0	12.0	12.8
Postal Savings	3.6	1.6	2.1	0.9
Total	29.5	26.7	37.4	34.6
B. Savings and Loan Share Capital	6.3	18.8	5.8	14.7
C. Private Insurance Reserves	37.5	37.6	30.4	34.3
D. U.S. Savings Bonds (Series E and H only)	26.1	15.6	26.0	15.3
E. Credit Unions: Shares and Deposits	0.6	1.4	0.3	1.1
TOTAL ASSETS	100	100	100	100

cent of total liquid assets owned in the U.S. and a considerably higher proportion of total liquid assets owned in the eastern seaboard states.

The absence of mutual savings banks in Chicago's financial structure is associated with a corresponding increase in the share of other types of liquid asset holdings, not only in the form of time and savings deposits at commercial banks, which are generally thought of as the nearest competitors to savings accounts at mutual savings banks, but through every other form of intermediary. Because of this, the banking system taken as a whole services a smaller proportion of liquid assets in Chicago than in the U.S. and the two major non-bank intermediaries, savings and loan associations and life insurance companies service a correspondingly larger proportion of these assets.

Other Financial Assets. Data are not available on the share of Chicago residents in other forms of financial asset holdings, such as marketable bonds and stocks, corporate pension funds, mutual investment company shares, and personal trust accounts at banks. Scattered evidence on the distribution of these holdings by industry and occupation groups and by income levels suggest that Chicago's share in these assets is above its share in total personal income receipts and probably no less than 6.0 per cent of total national holdings. However, except for ownership data on common stocks, there is no tangible evidence to support this or any other estimate.

Post-war censuses of stock ownership and periodic counts of the regional distribution of individual stock issues outstanding (e.g. American Telephone and Telegraph Company) provide estimates of stockholdings by states and other geographical areas. These data can be used as a basis for estimating total stockholdings owned in down-state Illinois, where the pattern of ownership relative to income is likely to correspond fairly closely with patterns in other mid-western farm areas for which ownership data are available. The estimates for Metropolitan Chicago, derived by subtracting down-state estimates from total Illinois and Indiana data, indicates that Chicago's share in stockholdings is around 6.0 per cent of the national total and that it has been declining gradually.

Six spot censuses of transactions on the New York Stock Exchange provide support for this estimate of Chicago's share in common stock ownership. These transaction studies classify total transactions by location of the customer's home. Customers resident in the city of Chicago account for around 5.7 per cent of recorded transactions originating in the continental U.S. and customers resident in the state of Illinois account for approximately 6.4 per cent.[2]

The Composition of Liquid Saving. The volume and composition of liquid asset holdings is the result of many decades of accumulation, and therefore changes relatively slowly, especially when measured in terms of Chicago's share in U.S. totals. In contrast, the annual flow of net saving into each of these assets is a sensitive variable which may undergo rapid change from one period to another both in absolute terms and relative either to national totals or to other forms of saving.

During the early post-war period, 1946-50, a net increase in private insurances reserves was the biggest single avenue of liquid saving both in Chicago and in the U.S. as a whole. In Chicago, individuals saved 2.14 per cent of their civilian personal income receipts in this form. The corresponding proportion for the nation was 1.64 per cent. In both areas, this channel of saving absorbed around one-half of the total flow of liquid saving from 1946-50, although the concentration of liquid saving through insurance reserves was somewhat lower in Chicago (44.0 per cent) than in the nation (50.0 per cent).

Saving through time and savings deposits at commercial, mutual savings, and postal savings banks provided the next most important vehicle for liquid saving during 1946-50. In Chicago, individuals saved 1.53 per cent of civilian personal income receipts in this form and in the U.S., 1.05 per cent. However, because of the absence of mutual savings banks in Chicago, the flow of income into saving at the three deposit-type institutions differed from the national pattern. For example, commercial banks in Chicago received 1.44 per cent of civilian personal income against 0.54 per cent in the U.S. as a whole, and the ratio of saving through postal savings deposits to civilian personal income in

2. New York Stock Exchange, *A Picture of the Stock Market,* March, 1958, pp. 14-15.

Chicago was twice as high as the corresponding ratio for the U.S. during 1946-50.

Savings and loan associations ranked third as a vehicle for liquid saving during the 1946-50 period. In Chicago, 0.95 per cent of civilian personal income flowed into this form of saving. The corresponding figure for the U.S. was 0.67 per cent of income. The other forms of liquid asset saving: U.S. Series *E* and *H* Savings Bonds and shares and deposits at credit unions, accounted for negligible proportions of saving in the early post-war years.

The over-all pattern of liquid saving changed markedly between 1946-50 and 1955. For the nation as a whole, savings and loan associations have grown in importance as a vehicle for liquid saving. Since 1955, this form of saving has equalled or exceeded the annual flow of saving through life insurance reserves or through banking depositories. This development is even stronger in Chicago than in the nation. During the period 1950-55 the net increase in deposits of share capital at these institutions in Chicago attracted 2.02 per cent of local personal income receipts, which was more than twice as high as the ratio for 1946-50. This flow of personal income into savings and loan associations in Chicago during 1950-55 was higher than the corresponding flow of savings deposits to commercial banks (1.00 per cent)[3] or into life insurance policy reserves (1.61 per cent).

The proportion of liquid saving flowing into savings and loan associations in Chicago has grown from less than one-fifth during 1946-50 to around one-half during 1950-55 and almost 60 per cent in 1956 and 1957. Chicago's share in the national total of this form of asset accumulation has also grown consistently. In contrast, Chicago's share in the U.S. in all other forms of liquid saving has declined and so has Chicago's share in total liquid saving.

It is easier to account for the general rise of savings and loan associations in the national market for liquid saving than it is to account for the relatively swifter rise of these intermediaries in the Chicago market. The first development, the overall national growth of savings and loan associations relative to savings accounts at banks and insurance policy reserves, can be explained by the relatively higher interest rates offered by these institutions

3. Postal depositories suffered a net withdrawal of saving during the period 1950-55.

and by the generally more assertive marketing policies they pursue. Both of these factors in turn are related to the high post-war level of demand for residential mortgage funds and the generally rising trend in mortgage rates. But why these factors should have a considerably larger impact on the composition of liquid saving in Chicago than in the nation as a whole is less clear. The differential between saving and loan dividend rates and rates paid by competitive intermediaries have been approximately the same in Chicago as in most parts of the country. Other differentials, such as advertising and marketing policies, the location pattern of existing institutions and laws governing new incorporations of various types of institutions, are harder, if not impossible, to measure. One factor of some significance is the more rapid growth in residential construction expenditures and mortgage borrowing in Chicago relative to the U.S. since 1950. Whatever its causes, the 1945-55 trend in the relative growth of savings and loan associations in the Chicago market for long-term liquid saving has continued since 1955. By 1965, it is highly likely that this continuing growth of saving and loan share capital relative to other forms of fixed-value liquid assets will make it the largest single type of financial holding owned by Chicago residents.

SAVING THROUGH RESIDENTIAL CONSTRUCTION

Individual ownership in housing has been an important avenue of personal saving during the post-war period. From 1945-55, the dollar volume of gross investment in new dwelling units has exceeded the total accumulation of liquid assets during this period. In addition, there has been substantial investment in the form of additions and alterations to existing units and in the form of new non-housekeeping units.

Not all gross investment in residential construction represents net saving. A very high proportion of this investment has been financed by borrowed funds, and the net increase in the volume of mortgage debt owed by individuals to financial institutions

must be subtracted from the total volume of residential construction in order to derive a measure of net saving through this form. Further, some allowance must be made for the annual loss in the value of the gross stock of housing on account of depreciation and other forms of capital consumption such as net losses of value to individuals caused by fire and demolition.

Reliable local estimates for all of these various components of saving related to residential construction are not available and for purposes of this study, the volume of individual saving through the purchase of housing is defined only in terms of its two major components: gross investment in new dwelling units (exclusive of additions and alterations and non-housekeeping units) less increases in mortgage debt on private residential property owed by individuals to banks, life insurance companies, and savings and loan associations.

Chicago's share in the dollar volume of expenditures on new dwelling units is a function of two factors: its share in the number of new dwelling units started, and the differential in average cost per dwelling units started in Chicago relative to the nation.

Average expenditures per dwelling unit in Chicago and in the nation have virtually doubled between 1946 and 1957, but the percentage differential between average dwelling units costs in the two areas has undergone little change. Over the post-war period as a whole, average expenditures per dwelling unit in Chicago have been approximately 42.0 per cent higher than corresponding figures for the U.S. While some part of this differential is due to the larger average size and greater technical complexity of dwelling units in Chicago relative to the national average, the data indicate that a substantial part of it is attributable to the higher costs of labor and material prevailing in the Chicago Area. Year to year fluctuations in the level of average expenditures per dwelling unit in Chicago relative to the U.S. do occur, but these are due primarily to fluctuations in the *composition* of dwelling units started in Chicago (single-family units versus multi-family units) relative to the corresponding composition in the nation. Because of these fluctuations, average expenditures per dwelling unit in Chicago since 1946 have varied between 130.0 per cent of the U.S. average and 152.0 per cent of the U.S. average but

these variations have occurred around a relatively constant average differential of 142.0 per cent.

While fluctuations in average expenditures per dwelling unit in Chicago relative to the nation contribute to fluctuations in Chicago's share in the total volume of expenditures on residential construction, the major cause of these fluctuations is the year-to-year change in Chicago's share in the total number of dwelling units started in the U.S. economy.

New Dwelling Unit Starts. Over the long-run fluctuations in new dwelling unit activity in the Chicago Area have paralleled those in the nation as a whole. Table 67 shows the wide movements in new dwelling unit activity in the Chicago Area and in the nation since 1921. While there is a strong relation between the cyclical pattern of new dwelling unit activity in Chicago and in the United States, there have been distinct changes in Chicago's share in total dwelling units started. This share has tended to follow Chicago's share in total population growth. During the housing boom of the 1920's, about 5.5 per cent of total national dwelling unit starts were located in the Chicago Area. Although

Table 67
Index of New Dwelling Unit Activity*, CMA and U.S.
(1953 = 100)

Year	CMA	U.S.	Year	CMA	U.S.
1921	45	42	1941	43	66
1922	83	67	1942	27	33
1923	115	82	1943	17	18
1924	126	84	1944	22	13
1925	138	88	1945	28	20
1926	141	79	1946	48	62
1927	142	76	1947	56	79
1928	120	70	1948	69	86
1929	65	48	1949	67	93
1930	11	31	1950	112	127
1931	5	24	1951	83	95
1932	1	13	1952	84	100
1933	1	9	1953	100	100
1934	1	12	1954	119	113
1935	3	21	1955	149	123
1936	12	30	1956	123	102
1937	9	31	1957	104	93
1938	11	38			
1939	22	48			
1940	28	56			

*1921-45 CMA data based on permits, U.S. data on non-farm starts. Both include public housing. 1946-58, Private non-farm starts only.

Chicago contained only about 3.5 per cent of total U.S. population, Chicago's share in population growth during the decade of the 20's was 6.8 per cent.

During the 1930's, Chicago's share in residential building activity and Chicago's share in population growth both fell sharply. For the decade as a whole, Chicago's share in population growth was 1.7 per cent and its share in new dwelling unit activity was 1.2 per cent.

During the decade of the 1940's, Chicago's share in population growth was 3.5 per cent, and its share in new dwelling unit activity was 3.0 per cent. Between 1950 and 1957, Chicago's share in population growth and in new dwelling unit activity rose together to 4.0 per cent and 3.8 per cent of corresponding U.S. totals.

As far as the new housing construction is concerned, the post-war decade falls into two distinct periods. From 1946 to 1952, Chicago's share in new dwelling unit starts, though rising, was below Chicago's share in population increase. Since 1952, Chicago's share in housing activity has risen sharply to a level higher than its share in population increase. This shift is particularly noticeable if the 1955 level of building activity in Chicago and in the nation are compared against the previous post-war peak reached in 1950. Whereas national dwelling unit starts in 1955 were somewhat lower than in 1950, new dwelling unit starts in Chicago in the latter year were far in excess of the level reached in 1950.

One explanation for the relatively increasing proportion of local resources devoted to new residential construction since 1952 is the behavior of the rent index in Chicago relative to the nation. Between 1946 and 1952, rents in Chicago rose at about the same rate as national rents. In 1952, both rent indexes were 18.0 per cent above the level prevailing during 1947-49. After 1952, rents in Chicago rose much more rapidly than in the rest of the U.S. By the end of 1957, the rent index in Chicago was 163.0 per cent of the 1947-49 average, as against an index of 137.0 per cent for the U.S. as a whole.

Table 68 shows the number of new private dwelling units started in Chicago and Chicago's rising share in this activity.

These data are based on building permit records and Bureau of Labor Statistics estimates, and it is useful to compare them with evidence provided by the special census of housing conducted in December, 1956.[4]

Table 68
New Private Dwelling Units Started, CMA, 1947-57

Year	CMA	CMA as Per cent of U.S.
1947	21,900	2.59
1948	26,920	2.95
1949	26,420	2.67
1950	44,024	3.25
1951	32,603	3.20
1952	32,823	3.07
1953	39,174	3.67
1954	46,698	3.89
1955	58,178	4.44
1956	48,306	4.42
1957	40,890	4.12

A comparison of the census of housing enumeration in December, 1956, with the preceding housing enumeration in April, 1950, shows that a total of 306,000 private and public dwelling units were started in the Chicago Area during the intervening period. The annual estimates constructed for this study (Table 68) show that 302,000 private units were started between January 1, 1950, and December 31, 1956. In addition approximately 9,500 public housing units were started during this period,[5] making a total of 311,500 private and public starts. Of these, approximately 8,500 starts took place during the first quarter of 1950, a period not covered by the census data. If these first quarter starts are eliminated, the data in Table 68 imply that 303,000 new dwelling units were started in the Chicago Area between the two census dates. This compares with the census estimate of 306,000 new dwelling unit starts—a difference of approximately 1.0 per cent.

In addition to providing supporting evidence on the total

4. Bureau of the Census, *National Housing Inventory, 1956.*
5. Department of City Planning, City of Chicago, *Residential Construction and Related Data,* and records of the Chicago Housing Authority.

volume of new dwelling units started in the Chicago Area, the census data provide the only available measures of the composition of other factors which change Chicago's stock of housing—such as gross additions from conversions and net losses through demolitions and mergers of existing units. During the six and

Table 69
Expenditures on New Dwelling Units, CMA and U.S., 1947-57
(Millions of Dollars)

Year	CMA	U.S.	CMA to U.S. (Per cent)
1947	214	5,450	3.92
1948	286	7,500	3.81
1949	277	7,257	3.82
1950	523	11,525	4.54
1951	426	9,849	4.32
1952	462	9,870	4.68
1953	572	10,555	5.41
1954	691	12,070	5.73
1955	941	14,990	6.27
1956	834	13,535	6.16
1957	748	12,615	5.93

three-quarter year period between the two census dates, approximately 4,300 units were added each year from conversions and other sources. This was approximately 5.3 per cent of total such additions in the United States. Losses from Chicago's housing inventory due to demolition of existing units were approximately 5,400 per annum, or about 2.74 per cent of such losses in the U.S. as a whole. In addition there were losses from mergers, and other factors amounting to 7,500 units per year, or 2.4 per cent of corresponding losses in the U.S. Taking all factors together, Chicago's housing stock grew from 1,646,000 units in April, 1950, to 1,931,000 units in December, 1956.

Expenditures for New Dwelling Units. Because new dwelling units started in Chicago involve a higher average expenditure per unit than corresponding units started in the U.S., Chicago's share in total expenditures on private dwelling units is approximately 42.0 per cent higher on the average than its share in new

starts. Actual year to year estimates for the period 1947-57 are shown in Table 69. Chicago's share in dwelling unit expenditures were below 4.0 per cent prior to 1950. From 1950 to 1952, they averaged 4.5 per cent. After 1952, they rose rapidly to a peak of 6.3 per cent in 1955, since which time they have declined to around 6.0 per cent.

Table 70
Ratio of Expenditures on New Dwelling Units to Civilian Personal Income, CMA and U.S., 1947-57

Year	CMA	U.S. (Per cent)
1947	2.20	2.93
1948	2.66	3.66
1949	2.60	3.59
1950	4.53	5.20
1951	3.31	4.00
1952	3.46	3.78
1953	3.95	3.83
1954	4.85	4.34
1955	6.14	5.07
1956	5.10	4.27
1957	4.28	3.73

The annual flow of civilian personal income into this important form of gross savings is shown in Table 70 for Chicago and for the nation. There have been marked fluctuations in the fraction of civilian personal income expended on new dwelling units, and local fluctuations in this variable reflect corresponding movements in the nation. However, over the decade as a whole, there has been a marked change in the proportion of local resources used for new dwelling units relative to the corresponding national proportion. Prior to 1952, housing expenditures in Chicago absorbed a smaller fraction of personal income than was true in the nation. Since 1953, the proportion of personal income used for this purpose has been higher in Chicago than in the rest of the country. The greater relative diversion of local resources into this form of gross saving in Chicago, ties in closely with the trends observed in local liquid asset accumulation, i.e. the decline in

Chicago's share in total saving through liquid assets from 9 per cent in 1952 to 6 per cent in 1955 and the rise within liquid saving of the fraction flowing into savings and loan associations.

INDIVIDUAL BORROWING

Over the ten year period 1946-55, individuals in the United States invested $92.4 billion in new dwelling units, of which $4.5 billion was invested in buildings located in Chicago. These investments were accompanied by large increases in the net volume of mortgage debt owed by individuals to financial institutions, principally to the four major intermediaries in the mortgage market: commercial banks, mutual savings banks, life insurance companies, and savings and loan associations. For the U.S. as a whole, 78 per cent of the $92.4 billion spent on new housing represented the investment of net borrowings from these four major institutions. The remaining 22 per cent of individually financed expenditure is an approximate measure of individual saving through this form.[6] For the post-war period, saving measured in this way amounted to $24.6 billion.

In Chicago, the $4.5 billion of gross investment in new dwelling units was accompanied by a relatively smaller increase in individual mortgage debt to the four major institutions than was true in the nation—65 per cent as against 78 per cent. Thus, net saving per dollar of gross investment in new dwelling units was higher in Chicago than in the nation, and Chicago's share in net saving through this form was correspondingly higher than Chicago's share in new dwelling unit expenditures. Over the ten year period, net saving through this form in Chicago amounted to $1.6 billion or 6.5 per cent of the corresponding U.S. total. The behavior of annual net saving through this form, reflected the increase in Chicago's share in new dwelling unit starts and in

6. Approximate because it ignores the fact that some of the net funds borrowed were used for major alterations and additions to existing units and for the construction of nonhousekeeping units, neither of which are counted in the $92.4 billion of gross investment, and because it excludes the relatively small amount of borrowing by individuals from institutions other than the four major lenders.

expenditures on such units. Between 1945 and 1955, Chicago's share in net saving through new housing rose from around 4.8 per cent, during the first five years of the decade, to 7.5 per cent of the U.S. total.

During the first five year period of the post-war decade, residential construction activity in Chicago was relatively slow and liquid asset accumulation was relatively high as compared to the rest of the country. In this period, saving through residential construction accounted for only 16 per cent of total identifiable saving in Chicago compared with 27 per cent in the nation. After 1950, the U.S. as a whole began to divert a higher proportion of its net saving into liquid asset accumulation. Exactly the opposite happened in Chicago, especially after 1952. Thus in the latter half of the post-war decade 1950-55, net saving through residential construction in Chicago accounted for 27 per cent of total individual saving as against 23 per cent in the United States.

Other Consumer Debt. Like mortgage borrowing, consumer borrowing for other purposes is also an offset to gross saving, and subsequent repayments of these debts represent one form of individual saving. Over the post-war period as a whole, consumer indebtedness to institutions has increased, and these increases must be subtracted from gross accumulation of liquid assets by consumers in order to derive a measure of net individual saving. Unfortunately, regional measures are available only for the volume of consumer debt held by banks. Over the post-war decade this form of debt increased approximately $15 billion in the U.S. as a whole, and the share of Chicagoans in this increase was somewhat under 4 per cent. While this figure is low relative to Chicago's share in personal income and financial asset ownership, it corresponds closely with Chicago's share in expenditures on new and used automobiles—the major purchase item associated with consumer borrowing.

The very high levels of per capita personal saving in Chicago relative to the nation discussed in Chapter 9, and Chicago's very large share in the post-war flow of total personal saving, appear to be the result of two factors. One factor is the relatively higher rate at which Chicagoans purchased liquid assets out of personal income. The other factor is the relatively lower use Chicagoans

made of mortgage and other consumer debt for the purpose of financing expenditures on automobiles and new dwelling units. The joint result of these two factors is that Chicago residents have contributed almost 7 per cent of the total post-war flow of net individual saving in the United States—almost twice as high on a per capita basis as the U.S. average.

Technical Appendix

SOURCES AND METHODS OF ESTIMATION

A. General

The Chicago Standard Metropolitan Area as defined by the U.S. Bureau of the Census consists of six counties: Cook, DuPage, Kane, Lake, and Will counties in Illinois and Lake County, Indiana. Unless specifically excepted, all references in this study to *Chicago,* the *Chicago Area* or the symbols *CMA* apply to this area.

None of the principal statistical measures used in modern economic analysis (labor force, employment, production, income, and saving) are available for the metropolitan area on a basis consistent with and comparable to existing national series. The construction of these measures was an essential first task in examining the area's economy. The procedures used in deriving the estimates were governed by two considerations: (1) that the CMA series should be directly comparable to their state and national counterparts, and (2) that these series should be constructed in sufficient detail and continuity to allow for meaningful economic analysis of the area's structure and growth relative to the nation.

The basic series on employment, output, and personal income were derived by summating individual estimates for each of the ten major industry groups and the twenty standard two-digit subgroups in the important manufacturing sector. Detailed estimates of employment, output and income were made for each year 1940 and 1946-1957. In addition, annual estimates of residential con-

struction expenditures and financial asset holdings were made for the post-war years. Annual measures for three related variables: disposable income, consumer expenditures, and saving, were not feasible due to the lack of sufficiently reliable primary evidence and these were estimated only for selected years.

Main Statistical Approach. The main statistical approach used in deriving CMA estimates can best be described as a systematic and detailed allocation or apportionment of known state or national data. This approach involves six basic steps:

STEP ONE: Assemble data for each of the parent series (state and national) in terms of its own detailed components;

STEP TWO: Assemble all available information which can be used as a basis for apportioning components of state or national data to the Chicago Area. (Any piece of economic information which is available both on a county or metropolitan area basis, on the one hand, and a state or national basis, on the other, is a potential allocator);

STEP THREE: For each component part of each parent series, select the most appropriate allocator available for apportioning purposes, i.e., the allocator derived from measures which correspond most closely to the data being allocated;

STEP FOUR: Extend each of these selected allocators into a continuous *allocator series* which covers each year in the time period covered (generally these extensions can be based on movements in related economic series and where this is not possible extensions of the allocator series must be based on arithmetic interpolations or extrapolations);

STEP FIVE: Apply each allocator series to each component of the various parent series. This yields CMA counterparts for each of these components;

STEP SIX: Summate CMA components to get the required CMA measures.

Information Available. The major source for the allocators used in apportioning state or national totals is the considerable body of government data which provides information on a concurrent and consistent basis for counties, states, and the nation, e.g., the periodic census enumerations of population, housing, manufactures, trade, selected services, agriculture; statistics on

covered employment and earnings compiled by the Bureau of Old Age and Survivors' Insurance (BOASI), and the State Unemployment Insurance Agencies (UI); and financial statistics released by the Federal Reserve System and the Federal Home Loan Bank Board.

Allocator Series. For most variables, primary allocators were available on a frequent, if not continuous basis. Where a continuous allocator series was not directly available, such a series was compiled by interpolating or extrapolating benchmark allocators, on the basis of changes observed in related series. Where these were not available, arithmetic interpolation and extrapolation was used.[1]

Reliability of the Estimates. The accuracy of the estimates constructed for Chicago depends on several factors. One obvious factor is the accuracy of the parent series (state or national) to which the local series are tied. More importantly, the accuracy of each component element in the Chicago series rests on two factors: (1) the appropriateness of the benchmark allocators used in deriving them, and (2) the frequencies with which these allocators are directly available as opposed to years in which the allocator itself is derived from related evidence or by interpolation. Finally, for each overall measure, an important consideration is the relative weight within it of those components which are reliably based versus those which are based on less satisfactory evidence.

Most of the broad measures developed for the CMA have been built up from two basic series: the number of employees in nonagricultural establishments, and total wage and salary disbursements. Both these series were themselves constructed from reliable and appropriate allocators available on a direct and more-or-less continuous basis, and thus they impart a large measure of reliability to the other estimates of which they are a significant part, e.g., employment, production, and income.

Intra-Area Estimates. Reliable estimates for the individual counties within Chicago are not available for any of the major

1. For a discussion of interpolation and extrapolation methods available, see *Personal Income by States Since 1929* (U.S. Department of Commerce, Washington, 1956), pp. 69-70.

series developed in this study even though some of the basic estimates, notably of employees and wage and salary disbursements, were themselves tabulated on a county basis. This is so for two reasons: in the first place, appropriate county allocators for all component items in any series are simply not available and secondly, large commutation flows across county lines within the metropolitan area preclude the possibility of estimating wage and salary receipts of county residents from wage and salary disbursements made in that county. Although some commutation problem exists for almost any small area within the nation, grouping counties into metropolitan areas reduces the statistical problems arising from cross-commutation to a reasonable minimum.

B. Nonagricultural Wage and Salary Employees

By far the largest category of employment in Chicago consists of nonagricultural wage and salary workers. National and state estimates of this category of employment are compiled by the U.S. Bureau of Labor Statistics[2] and individual State Departments of Labor.[3] In addition, the Illinois State Department of Labor has compiled and published data for the Chicago Area since 1952.[4]

All of these series are prepared from monthly reports submitted regularly by a sample of nonagricultural establishments covered by unemployment compensation legislation. The estimates cover all nonagricultural wage and salary workers, including civilian government employees, but exclude domestic service workers, members of the armed forces, self-employed persons, and unpaid family workers. Separate estimates are available for the ten major industry groups and the twenty two-digit industrial subgroups in manufacturing. The data apply to a person's place-

2. U.S. Bureau of Labor Statistics, *Monthly Labor Review* and *Employment and Earnings*.

3. Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours and Earnings in Illinois* (monthly) and Indiana State Employment Service, Employment Security Division, *Total Employment in Nonagricultural Industries in Indiana* (periodically).

4. Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours and Earnings in the Chicago Metropolitan Area* (monthly).

of-work and not to place-of-residence, and monthly estimates refer to the payroll period ending nearest to the 15th of each month.[5]

The Illinois Department of Labor estimates for Chicago for the period 1952-57 were accepted as controlling; and estimates for prior years were developed which tie-in with these data. These were derived by apportioning state data for Illinois and Indiana on the basis of an allocator series drawn from secondary sources. In carrying out the apportionment, separate estimates were constructed for the Illinois and Indiana portions of the Chicago Area for each of the ten major industry groups and for the 20 standard subgroups in manufacturing.

For each of the twenty subindustry groups in manufacturing, the known allocator series for 1952-57 was extended back to 1946-51 on the basis of changes in Chicago's share in state employment totals as shown in BOASI employment data for each industry for each of these years. The extension to 1940 was made on the basis of information provided in the Census of Manufactures for 1939 and 1947.

For all nonmanufacturing industries, except government and the interstate railroad segment of transportation, the extension of the 1952-57 allocator series was based primarily on changes shown by BOASI data which were available for all post-war years except 1949 and 1950. The allocation ratios for 1940 were drawn from Census of Population data; those for 1950 are based in part on Census of Population data and in part on interpolation; the 1949 ratios are interpolations.

The allocator series for employees in civilian government and interstate railroads was extended to 1940 and 1950 on the basis of Census of Population data and to intervening years by straight-line interpolation.

Metropolitan estimates for this entire category of employment can be expected to have a high degree of reliability for two reasons: (a) employment in the Chicago Area accounts for a very high proportion of known state totals and (b) the allocators used correspond closely in scope and magnitude to the variables being

5. U.S. Bureau of Labor Statistics, *Techniques of Preparing Major Bureau of Labor Statistics Statistical Series*, Bulletin No. 1161, December, 1954, pp. 43 ff.

allocated. Exhibits 1 and 2 below show the proportion of employment activity in Illinois and Indiana which is located in the metropolitan segments of the two states. For the important manufacturing sector, the Illinois portion of the Chicago Area accounts for about 72 per cent of total manufacturing employees in the state. At the two-digit level, the proportion of total Illinois em-

Exhibit 1
Manufacturing Wage and Salary Workers, by Industry, CMA, 1952*
(Thousands)

	ILLINOIS COUNTIES†		LAKE, INDIANA	
	Number	Per cent of State of Illinois	Number	Per cent of State of Indiana
Manufacturing	903.9	71.98	100.9	16.32
Food and Kindred Products	106.3	72.31	2.9	‡
Tobacco	.7	87.50	§	‡
Textile-mill Products	8.9	67.94	.6	14.28
Apparel and Products	44.0	76.38	.5	‡
Lumber and Wood	8.4	60.00	.1	‡
Furniture and Fixtures	23.8	79.86	§	‡
Paper and Products	23.8	77.52	.5	‡
Printing and Publishing	78.8	84.73	1.4	7.91
Chemicals	35.9	70.80	4.1	17.52
Products of Petroleum and Coal	7.4	46.83	10.9	92.37
Rubber and Products	4.8	75.00	§	‡
Leather and Products	10.8	43.90	§	‡
Stone, Clay, and Glass Products	16.5	50.15	2.6	11.25
Primary Metals	68.5	64.62	60.6	67.26
Fabricated Metals incl. Ordnance	89.6	71.56	8.2	19.16
Machinery, except Electrical	136.0	58.69	2.3	‡
Electrical Machinery	126.5	86.23	.1	‡
Transportation Equipment	48.8	86.06	5.2	‡
Instruments	24.3	84.96	§	‡
Miscellaneous Manufactures	39.8	89.43	.9	‡

*As reported by BLS: Illinois State Employment Service, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Illinois*, Number 1; and *Employment, Hours, and Earnings in Chicago Metropolitan Area*, Number 1. Indiana State Employment Security Division, Research and Statistics Section, *Total Employment in Nonagricultural Industries in Indiana;* and *Calumet Area (Lake County) Labor Force Summary.*

†Cook, DuPage, Kane, Lake, and Will Counties.

‡Less than 5.00%, or not reported separately.

§Included in "Miscellaneous manufactures."

ployees located in the Chicago Area ranges from 44 per cent (leather goods) to 90 per cent (miscellaneous manufactures) of corresponding state totals. Lake County, Indiana, which accounts for approximately 11 per cent of manufacturing workers in the

Exhibit 2
Non-Manufacturing Employment, by Industry, CMA, 1952*
(Thousands)

	ILLINOIS COUNTIES†		LAKE, INDIANA	
	Number	Per cent of State of Illinois	Number	Per cent of State of Indiana
Mining	4.1	10.30	—	—
Contract Construction	95.0	58.10	8.5	13.22
Transportation	155.6	70.34	8.5	11.44
Communication and Public Utilities	55.1	65.44	3.1	9.75
Wholesale Trade	158.1	78.81	3.8	6.48
Retail Trade	328.4	65.23	21.3	9.93
Finance, Insurance, and Real Estate	130.1	81.77	2.9	7.27
Services and Miscellaneous	269.1	75.08	8.7	8.86
Government	211.1	63.41	7.5	8.86

*As reported by BLS: Illinois State Employment Service, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Illinois*, Number 1; and *Employment, Hours, and Earnings in Chicago Metropolitan Area*, Number 1. Indiana State Employment Security Division, Research and Statistics Section, *Total Employment in Nonagricultural Industries in Indiana*; and *Calumet Area (Lake County) Labor Force Summary*.

†Cook, DuPage, Kane, Lake and Will Counties.

Exhibit 3
Employees in Manufacturing Industries in CMA, Comparison of BOASI Report with BLS Data, 1953
(Thousands)

Industry	Number Reported by BOASI	Per cent of BLS Figure
All Manufacturing	1,076.7	100.88
Durables	726.1	101.03
Nondurables	350.6	100.57
Food	107.5	98.71
Tobacco	.9	150.00
Textiles	7.6	91.57
Apparel	43.3	98.63
Lumber and Wood	9.8	106.52
Furniture and Fixtures	26.1	104.82
Paper and Products	26.1	101.16
Printing and Publishing	83.1	100.12
Chemicals	42.7	99.30
Petroleum and Coal	23.2	122.75
Rubber	6.5	130.00
Leather and Products	10.7	95.54
Stone, Clay, and Glass	17.9	90.41
Primary Metals	143.4	100.00
Fabricated Metals	114.3	108.86
Machinery	140.6	98.25
Electrical Machinery	138.3	97.67
Transportation Equipment	63.0	100.64
Instruments	28.4	111.81
Miscellaneous	43.3	99.08

Source: U.S. Department of Commerce and U.S. Department of Health, Education, and Welfare, *County Business Patterns, 1953*, Part 4. Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Chicago Metropolitan Area*, Number 11.

total Chicago Area, occupies a somewhat smaller share in Indiana (16 per cent) than the Illinois Counties occupy with Illinois. However, more than 70 per cent of manufacturing employees in Lake County are concentrated in two industries: primary metals and petroleum and coal products, and in these industries Lake County's share in Indiana is 67 per cent and 92 per cent respectively. Thus for both segments of the metropolitan area, employment in all significant industries in the area represents a very high proportion of known state totals. The same situation holds for nonmanufacturing industry groups, though to a somewhat lesser extent. However, even in these groups, industries for which the metropolitan proportion of state totals is low, e.g., mining, are also industries which are of fairly trivial importance in Chicago totals.

Exhibit 4
Non-Manufacturing Employment in CMA, Comparison of BOASI Report with BLS*, 1953
(Thousands)

Industry	*Number Reported by BOASI*	*Per cent of BLS Figure*
All Industries Covered*	1,092.0	93.61
Mining	4.0	100.00
Contract Construction	92.6	85.82
Wholesale Trade	165.2	98.45
Retail Trade	337.1	94.37
Transportation*	86.2	108.70
Communication and Public Utilities	63.6	106.53
Finance, Insurance, and Real Estate	130.1	95.59
Services*	213.2	75.26

*Some of the industries reported in BLS statistics are not covered by BOASI and these were excluded from BLS totals for comparative purposes. Major groups thus excluded are: employees in Federal, State, and Local Governments, employees in Interstate Railroads, and a number of employees in professional services.

Source: U.S. Department of Commerce and U.S. Department of Health, Education, and Welfare, *County Business Patterns, 1953*, Part 4. Illinois State Department of Labor, Division of Unemployment Compensation, *Employment, Hours, and Earnings in Chicago Metropolitan Area*, Number 11.

A second factor making for reliability of the employee estimates is the scope and quality of the allocators which are available for the purpose of apportioning state totals. For most years and most industries, Bureau of Old Age and Survivors' Insurance Employment data provide an allocation basis which corresponds closely in scope, coverage, and structure to the BLS employee series being allocated. (See Exhibits 3 and 4.) Census data,

which provide the allocation basis for 1940 and for some industries in 1950, correspond somewhat less closely to BLS measures but are nonetheless highly reliable in terms of scope and coverage.

C. Population, Labor Force, and Employment

Population. Benchmark data for 1940 and 1950 are Census of Population enumerations. For 1946-49 and 1951, Chicago estimates are based on allocations from annual estimates for Illinois and Indiana published by the U.S. Bureau of the Census. The allocating ratios used are straight-line interpolations between known benchmark ratios for 1940 and 1950.

For 1952-57, estimates of Chicago's population are based on those prepared by the Chicago Community Inventory.[6] The same agency also prepares estimates for the State of Illinois using the same procedures. These estimates for Illinois differ from the official estimates for Illinois published by the Bureau of the Census.[7] As shown in Exhibit 5 these differences were minor in 1952 but have gradually tended to increase. In accordance with

Exhibit 5
Alternative Population Estimates, Illinois, 1952-57
(Thousands)

	(1) U.S. Bureau of the Census	(2) Chicago Community Inventory	(3) Ratio of (1)/(2)
1952	8,910	8,913	99.97
1953	9,002	9,039	99.59
1954	9,151	9,193	99.54
1955	9,316	9,423	98.86
1956	9,482	9,593	98.84
1957	9,637	9,754	98.80

Sources: (1) U.S. Bureau of the Census, *Statistical Abstract of the United States*, annually.
(2) State of Illinois, Department of Public Health, special releases, periodically.

6. Chicago Community Inventory, *Population Growth in the Chicago Standard Metropolitan Area, 1950-1957*, No. 2, February, 1958. For the estimating procedures used, see State of Illinois Department of Public Health, *Special Release, No. 23*, September, 1956, pp. 15-19.

7. For a discussion of alternative approaches to post-censal population estimation, see Henry S. Shyrock, Jr., "Development of Postcensal Population Estimates for Local Areas," in National Bureau of Economic Research, *Regional Income: Studies in Income and Wealth*, Vol. 22 (New York: National Bureau of Economic Research, 1957), pp. 377-399.

the general principle of constructing metropolitan measures which tie-in directly to official state and national measures, the Chicago Community Inventory estimates for the five Illinois Counties of the Chicago Area were statistically adjusted to the Census basis using the ratio between the two sets of estimates for the State of Illinois as the adjustment factor. Because estimates based on the Chicago Community Inventory method were not available for the State of Indiana, Lake County estimates were not adjusted similarly. The metropolitan estimates for 1952-57 used in this Study consist of adjusted data for the five Illinois counties plus Chicago Community Inventory data for Lake County, Indiana. (See Exhibit 6.)

Exhibit 6
Population Estimates, CMA, 1952-57
(Thousands)

	FIVE ILLINOIS COUNTIES		Lake County, Indiana	Chicago Metropolitan Area (Adjusted)
	Chicago Community Inventory	Adjusted		
1952	5,252.0	5,250.4	401.5	5,651.9
1953	5,343.5	5,321.6	415.5	5,737.1
1954	5,462.0	5,436.9	424.4	5,861.3
1955	5,632.9	5,568.7	428.5	5,997.2
1956	5,762.3	5,695.5	445.7	6,141.2
1957	5,883.1	5,812.5	464.9	6,277.4

Total Civilian Employment. National estimates of total civilian employment, which includes self-employed workers, agricultural workers and domestic service workers, are based on sample surveys conducted by the U.S. Bureau of the Census. These Census estimates are not available on a metropolitan basis, and the method of sampling used for the national estimates precludes their use as a basis for local estimates. The measures of total civilian employment in Chicago were constructed as the sum of four separate series: (1) nonagricultural wage and salary workers, (2) domestic service workers, (3) self-employed persons and unpaid family workers in nonagricultural activity, and (4) agricultural employment.

Local estimates of the first and largest category of employment have already been described. This series ties in with state

and national estimates prepared by the Bureau of Labor Statistics. At the national level, BLS estimates of wage and salary workers generally exceed the Census estimates for this category by amounts ranging from one to five per cent on an average annual basis. It was assumed that a similar discrepancy exists at the local level; and the BLS-related estimates for Chicago were adjusted downward, each year, by the ratio-difference between the Census and BLS estimates of national totals.

The estimates of domestic service workers, self-employed persons, and unpaid family workers are derived by direct allocations of national Census estimates. Benchmark allocation ratios are drawn from Census of Population data for 1940 and 1950. For domestic service workers, the latter ratio was used for all post-war years. The allocation series for self-employed persons and non-paid family workers was derived somewhat more elaborately. For the post-war period, Chicago's share in self-employment, by industry group in 1950, was assumed to vary proportionately with Chicago's share in wage and salary workers in each of these industries.

Total agricultural employment, which includes wage and salary workers and self-employed persons in agriculture, accounts for less than 1 per cent of total Chicago employment. Benchmark estimates for 1940, 1946, 1950, and 1955 are provided by Census data. Estimates for other years consist of allocations of state data provided by the U.S. Department of Agriculture in *Agricultural Statistics*. The allocation ratios used consist of interpolations of benchmark ratios.

Unemployment. National unemployment data are based on a monthly sample count of households. The sampling design precludes the use of these data to estimate unemployment in small areas. The only information available at the local level consists of insured unemployment data collected by local offices of the Unemployment Compensation Division and unpublished estimates of total unemployment for selected labor market areas. The latter data are built up from insured unemployment statistics and information drawn from local offices of state placement services. Such a series is available in mimeographed form for the Chicago-Calumet Labor Market Area on a monthly basis

since 1952 with unofficial annual estimates going back to 1946. (See Exhibit 7.)

Exhibit 7
*Unemployed Civilian Labor Force in Chicago-Calumet Area**
(Thousands)

1946	111.8
1947	78.3
1948	78.6
1949	139.7
1950	118.2
1951	66.9
1952	63.1
1953	51.3
1954	147.0
1955	104.9
1956	69.0
1957	89.2

*Includes Cook and DuPage Counties in Illinois and Lake County, Indiana.
Source: Illinois State Department of Labor, Division of Unemployment Compensation. The data prior to 1950 are unpublished, unofficial estimates.

The Chicago estimates for total unemployment used in this study are derived from the Chicago-Calumet Labor Market Area series except for 1940 which was tabulated from the Population Census of that year. For post-war years, the Chicago-Calumet series was converted to a Chicago basis by using a constant blow-up ratio of 105.46 per cent. This adjustment factor is the ratio of total unemployment in Chicago in 1950 to total unemployment in the Chicago-Calumet area in that year, and was tabulated from county enumerations contained in the U.S. Census of Population, 1950.

The general scope of these local unemployment estimates is identical with that of the "old definition" of national unemployment used prior to January, 1959. However, due to the altogether different methods by which the actual estimates are derived, there is no way of assessing the numerical comparability of local to national estimates.

D. Civilian Wage and Salary Disbursements

An estimate of wage and salary disbursements is the first step toward the preparation of income data. Wages and salaries consist of all current payments which are normally classified as such,

including commissions, bonuses, retroactive pay and payments in kind. These data are measured on a gross basis, before taxes, contributions to social insurance, union dues, or any other deductions.[8]

In addition to a national series, the Department of Commerce prepares and publishes wage and salary estimates on an individual state basis. The official procedure for computing state wage and salary disbursements consists of a systematic build-up of totals from a variety of sources. The most important of these, accounting for up to 75 per cent of wage and salary payments in industrial states, are the regular payroll reports published by the state unemployment insurance agencies.

Unemployment insurance payroll data are also available on a county and metropolitan basis. Local estimates of the 25 per cent of wages and salaries not covered by these data are also possible, but the scattered evidence on which these must rest does not ensure a reliable tie-in with state and national totals. An alternative approach is to abandon direct estimates of various segments of total local payrolls in favor of indirect estimates derived by systematic allocations of official state totals. This was the procedure used in developing the Chicago series on wage and salary disbursements.

The allocation method used consists of a three-step procedure:

(1) Average annual earnings per employee in Illinois and Indiana, by industry and subindustry groups, were computed by dividing the known state totals for wage and salary disbursements by known state totals for the number of employees in each such group.

(2) A series showing the ratio of average annual earnings in the Chicago Area to Illinois and Indiana was constructed on the basis of earnings data contained in secondary sources. This was done separately for each industry and sub-industry group and separately for the Illinois and Indiana parts of Chicago.

(3) These ratios were applied to state annual average earnings estimates in order to obtain average annual earnings by

8. U.S. Department of Commerce, *Personal Income by States, Since 1929* and *National Income Supplement, 1954.*

industry and sub-industry for Chicago Area employees. Chicago Area wage and salary disbursements were then computed by multiplying these average annual earnings estimates by the number of employees in each industry.

The derivation of estimates required at each stage of this procedure is discussed more fully below.

State Average Annual Earnings. For all industry groups except services, the procedure involved was a simple division of published wage and salary data by appropriate employment totals. For the service and miscellaneous category, Department of Commerce wage and salary estimates include wages and salaries received by domestic service workers. However, the BLS category of service and miscellaneous employees excludes domestic service workers. The latter series was adjusted by adding estimates of domestic service employment compiled on the basis outlined in the preceding section.

Average Annual Earnings in Chicago. For manufacturing industries, benchmark ratios of the level of average annual earnings in Chicago to corresponding state totals were derived directly from data contained in the periodic Censuses of Manufactures (1939, 1947, and 1954) and the Annual Survey of Manufactures (1955 and 1956). These ratios were extended to other years on the basis of earnings data published by the Bureau of Old Age and Survivors' Insurance. These BOASI estimates of earnings per employee in the Chicago Area, by industry group, relative to Illinois and Indiana, correspond closely to the earnings-differentials shown in the Manufacturing Censuses. (See Exhibit 8.)

For industry groups other than manufacturing, earnings data published by the Illinois and Indiana State Departments of Labor are available both on a state and on a county basis for the period 1953-57. These ratios of average annual earnings in Chicago relative to Illinois and Indiana were extended to other years on the basis of evidence contained in BOASI data on earnings, and data on median incomes reported for 1940 and 1950 in the decennial Censuses of Population.

These sources provided a satisfactory basis for estimating earnings ratios for most industries for most of the years covered in the study. The important categories of employment not

covered by these major secondary sources are (a) civilian government workers, (b) railroad workers, and (c) agricultural wage and salary workers.

Exhibit 8
Earnings per Worker in Manufacturing Industries, CMA, as Per Cent of Illinois and Indiana—Comparison of BOASI and Census, 1947

	Illinois CMA as Per Cent of State		*Lake County as Per Cent of Indiana*	
	Census	*BOASI*	*Census*	*BOASI*
All Industries	103.9	103.9	116.7	*
Food	103.3	103.1	110.3	111.1
Tobacco	*	*	*	*
Textiles	104.1	103.6	*	*
Apparel	109.3	109.0	*	*
Lumber and Wood	110.5	111.8	*	*
Furniture and Fixtures	102.0	103.0	*	*
Paper and Products	99.0	99.7	*	*
Printing and Publishing	103.1	104.0	136.3	134.9
Chemicals	102.7	103.0	109.3	108.7
Petroleum and Coal	98.7	101.4	101.1	100.8
Rubber	*	*	*	*
Leather	123.4	121.5	*	*
Stone, Clay, and Glass	102.3	102.0	*	*
Primary Metals	104.6	103.7	105.0	104.8
Fabricated Metals	102.8	104.0	106.8	106.2
Machinery	104.6	105.0	*	*
Electrical Machinery	101.7	101.7	*	*
Transportation Equipment	103.5	102.9	100.5	100.1
Instruments	103.8	104.2	*	*
Miscellaneous	102.3	102.3	*	*

*Not reported separately.

Source: U.S. Bureau of the Census, *Census of Manufactures, 1947*; U.S. Bureau of Old Age and Survivors Insurance, *County Business Patterns, 1947*.

Benchmark estimates of average annual earnings of civilian government employees, by county and state, were prepared from data contained in the 1950 Census of Population. For Federal employees, the 1950 ratio of average annual earnings in Chicago to average annual earnings in Illinois was used for all post-war years. For state and local government employment, a second benchmark ratio was available in the 1957 Census of Governments,[9] and the allocating series for 1951-57 was interpolated accordingly. For the pre-war year, 1940, the ratio used for all civilian government employees (excluding work-relief personnel) was derived from data contained in the U.S. Department of

9. U.S. Department of Commerce, Bureau of Census, *Census of Governments, 1957*.

Labor, Bureau of Labor Statistics, *State, County and Municipal Survey: Government Employment and Payrolls,* August, 1942. Wage disbursements for civilian government employees in 1940 included payments to workers on work relief. Chicago's share in these payments was derived by assuming that it was proportional to the number of persons on work relief in Chicago relative to the nation as shown in the 1940 Census of Population.

For railroad workers, benchmark ratios of average annual earnings were available for Census years 1940 and 1950, and the latter ratio was used for all post-war years.

For agricultural wage and salary workers benchmark data for average annual earnings ratios were available for 1940, 1946, 1950 and 1954 in the Quinquennial Censuses of Agriculture. Ratios for other years are interpolations between these benchmark ratios.

In spite of the wide diversity of sources used in converting state data on average annual earnings to local estimates on average annual earnings, the estimates of total wage and salary disbursements derived by this method probably tie-in very closely to corresponding state and national totals.

E. Personal Income Received

Personal income is the current income received by persons from all sources. It includes transfer payments from government and business, but excludes transfers among persons. Civilian personal income excludes income derived from employment in the armed forces.

Detailed estimates and estimating procedures of personal income received, by states, were first presented in 1956.[10] In addition, a major part of recent efforts to measure economic activity on a less-than-state basis have been directed toward the measurement of personal income payments and receipts.[11]

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10. U.S. Department of Commerce, *Personal Income by States Since 1929.* These data are conceptually consistent with the national estimates of personal income. Regional data on income payments as opposed to income receipts have been compiled since 1922. (See Frank A. Hanna, "Introduction" in *Regional Income,* pp. 3-8.)

11. See Lorin A. Thompson, "Appraisals of Alternative Methods of Estimating Local Area Incomes," *Regional Income,* pp. 319-336, and John L. Johnson, *Income in Kentucky* (University of Kentucky Press, 1955).

Estimates for the CMA presented in this study rest heavily on systematic allocations of published and unpublished data for Illinois, Indiana, and the United States, provided by the U.S. Department of Commerce. As such, they tie-in directly with the state and national series on personal income.

Estimating Procedures. Total personal income receipts consist of four broad categories: (1) Labor Income (This includes wages and salaries and other labor income.); (2) Proprietors' Income; (3) Property Income (including rents, interest, and dividends); (4) Net Transfer Receipts. The last category is equal to total transfer payments received by individuals *less* individual contributions to social insurance. The relative importance of these categories of personal income in Chicago in 1955 is shown in Exhibit 9.

The estimating procedure for each of these major categories above was carried out in the greatest detail possible and this involved individual estimates for approximately 100 components for each year covered.

Exhibit 9
Personal Income by Major Sources, CMA, 1955
(Millions of dollars)

		Amount	Per Cent
Total Personal Income		15,471.3	
Income from Military Employment		146.0	
Civilian Personal Income		15,325.3	100.0
1. Labor Income		11,747.3	76.7
Wages and Salaries	11,370.3		
Other Labor Income	377.0		
2. Proprietors' Income		1,302.0	8.5
Farm	47.5		
Non-Farm	1,254.5		
3. Property Income		1,947.00	12.7
4. Net Transfer Receipts		329.0	2.1
Transfer Receipts	578.0		
less Individual Contributions to Social Insurance	(249.0)		

Labor Income. Wages and salaries received by CMA residents were taken as equal to wage and salary disbursements made by CMA industries. The assumption involved is that cross-commutation of workers across the metropolitan boundaries is negligible—

an assumption which follows from the very way in which the standard metropolitan area is defined.

The estimating procedure used for computing wages and salaries has already been outlined. The quality of the allocators available for estimating this form of personal income, and the fact that these payments account for three-fourths of personal income, imparts a high degree of reliability to the total series. Other labor income includes: employer contributions to private pension and welfare funds, and compensation for injuries, which account for 90 per cent of the total; and a variety of smaller receipts such as directors' fees, jury and witness fees, and marriage fees to justices of the peace. Chicago estimates were derived by allocating state totals on the basis of Chicago's share in state wage and salary payments.

Proprietors' Income. Proprietors' income is equal to the total income of sole proprietorships, partnerships and other unincorporated enterprises, adjusted for inventory valuation. Estimates for proprietors' income originating on farms in Chicago are described in the following section of this Appendix. Non-farm proprietors' income was estimated, by major industry groups, on the basis of unpublished state details provided by the Department of Commerce. All Chicago estimates are allocations from state totals, industry by industry. The allocating ratios used for 1950 were based on income data of self-employed persons and proprietors, by industry, as reported for the area and the states in the 1950 Census of Population. Allocation ratios for other years are extensions of these benchmark ratios, by industry, trended by the change in Chicago's share in wage and salary disbursements in each industry.

Property Income. Property income includes seven individually estimated components: dividends, private monetary interest, imputed interest on assets other than life insurance owned, imputed interest on life insurance owned, interest from government, monetary rents, and imputed rents. Metropolitan estimates of these components are based on unpublished data for Illinois and Indiana provided by the U.S. Department of Commerce.[12]

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12. The methodology underlying these state estimates is outlined in *Personal Income by States Since 1929*, op. cit., Part IV, Section 3.

Even at the national level, estimates of property income receipts are generally regarded as being less satisfactory than other components of income. Estimates for individual states have an even lower degree of reliability with respect to detailed components. Consequently, the metropolitan series derived from these data cannot be regarded as more than relatively rough estimates of the magnitudes being measured.

Estimates of dividend receipts for Illinois and Indiana were allocated to Chicago on the assumption that per capita share ownership in Illinois outside of Chicago differs from the per capita shareholdings in Indiana by the minor difference in non-property income per capita between the two areas. An independent check on these estimates is provided by the New York Stock Exchange Public Transactions studies which show the percentage of orders originated by residents of the City of Chicago and individual states for six survey dates, 1953-1957.[13] For years in which both sources are available, metropolitan estimates derived from these data agree closely with those described earlier.

The second major component of property income consists of various types of monetary and imputed interest receipts. These have been allocated directly from state totals on the basis of estimates of financial assets held by Chicago residents. The scope of these allocations is identical to those used by the Department of Commerce in its construction of the interest component of state property income data. Procedures used in deriving estimates of financial assets held by Chicago residents are described in a subsequent section of this Appendix.

The value of imputed rentals on owner-occupied dwelling units are described in the next section of this Appendix. Monetary rentals received by Chicago residents are allocated from state totals for this item on the basis of Chicago's share in all other forms of property income.

Transfer Payments. Transfer payments consist of disbursements made to individuals by government or business for which no services are rendered currently. The statewide estimates for this category are derived by summating over 40 separate series, some of which are based on direct evidence, and some of which

13. New York Stock Exchange, *A Picture of the Stock Market,* March, 1958.

are estimated through allocators which vary considerably in relevancy.

Chicago estimates were derived from state estimates on the basis of composite allocators. Total national transfer payments were first divided into three broad categories: (a) those related to retirement benefits, (b) those related to unemployment benefits, and (c) those related to veterans benefits and "all other" transfers. The relative importance of each of these categories in the national total varies markedly from one year to another during the period covered, and it was assumed that the composition of Illinois and Indiana transfer receipts varied accordingly.

The retirement benefit component of statewide transfer receipts was allocated to Chicago on the basis of Chicago's share in the number of people 65 years of age and over. The unemployment benefit component was apportioned on the basis of Chicago's share in unemployment, and the veterans' benefit and "all other" components were apportioned on a per capita basis.

Personal contributions for social insurance were assumed to be a function of nonagricultural wages and salaries, and were allocated accordingly.

Military Income. The civilian personal income estimates described above were prepared on an annual basis. In order to derive estimates of total personal income, including receipts flowing to Chicago residents from military employment, estimates of military income were computed for three benchmark years (1940, 1950 and 1955) from unpublished statewide data.

Net military pay received by Chicago residents was allocated from state estimates according to the relative number of armed forces personnel stationed in Chicago. Net family allowances and allotments received by Chicago residents from servicemen stationed elsewhere were allocated from state estimates on a per capita basis.

F. Civilian Income Produced[14]

In the national economic accounts, income produced is identi-

14. For purposes of this study civilian national income is defined as total national income *less* wages, salaries, and supplements received by members of the armed forces.

cal to total income accruing to the factors of production. Thus the statistic, *national income,* is a measure of output as well as a measure of income. It is constructed by aggregating the total earnings of factors of production supplied by residents of the nation, regardless of the physical location of these factors. National income data are not available except on a national basis, but for the U.S. as a whole they are published in great detail with respect to industry of origin and form of income generated. The latter breakdown, national income by distributive share, consists of four major categories. These are shown below in Exhibit 10 together with the relative importance of each category of the U.S. in 1955.

Exhibit 10
Composition of U.S. National Income—by Distributive Share, 1955
(Per cent)

(1)	Compensation of employees		68.9
	Wages and salaries	64.9	
	Supplements to wages and salaries	4.0	
(2)	Business income (adjusted for inventory valuation)		24.6
	Corporate profits before taxes	12.6	
	Proprietors' income	12.0	
(3)	Rental income of persons		3.1
(4)	Net interest income		3.4
	Total		100.0

The information required for estimating income produced on a regional basis is available for most categories of income shown in Exhibit 10. The major components for which reliable direct evidence is missing are corporate profits and net interest payments generated by corporate activity in local areas. Estimating these components of income produced can be done on a regional basis only by assuming that the flow of total business profits (corporate and non-corporate) and net interest payments on business debt,[15] in each sub-industry group, is proportional to wage and salary disbursements in these groups. Although there are regional differences in the overall mixture of capital to labor and within capital, in the mixture of debt to equity, regional differences in these factors for *any given industry* or sub-industry are likely to be small. For an area like Chicago, individual in-

15. This excludes residential mortgage debt and consumer debt.

dustries which are important in terms of business income produced are also likely to employ mixtures of capital and labor which are typical of national mixtures prevailing in these industries.

Metropolitan Income. For a metropolitan area, income produced in the region is not necessarily identical to income accruing to the agents of production resident in that region. This is so primarily because the location of value-added and hence of profit generated by corporate business does not usually correspond with the location of ownership interests in those profits. A similar discrepancy exists between income produced and income accruing in the form of wages and salaries and for income arising from non-corporate business activity. However, the magnitude of such discrepancies is likely to be much smaller than is true of income arising from corporate activity. In any case, at the regional level there is a distinction between income produced and income accruing. For purposes of this study the regional counterpart to national income has its chief use as a measure of regional output; and the measure developed was constructed toward this end. It measures what its full title indicates — *Civilian Metropolitan Income Produced* — and it explicitly includes all income produced by factors of production (other than members of the armed forces) located in the Chicago Area without regard to the location of ownership in this income. Thus the metropolitan measure is comparable to civilian national income originating in all industrial sectors except that defined in the national accounts as "rest of the world." This exclusion is necessary because the national accounts define output in terms of rewards accruing to factors of production *supplied* by residents of the United States whereas regional income in this study is defined in terms of the physical location of production.

Measurement. Civilian income produced was derived by aggregating separate estimates for each industry group and each sub-industry in manufacturing, by type of income. The Chicago series on civilian wage and salary disbursements directly provided data for 68 per cent of total income produced and indirectly provided a basis for estimating a further 26 per cent. The remaining 6 per cent of income produced was estimated by allocating

known national totals to CMA. Detailed procedures are described below.

For all industry groups (and sub-industries in manufacturing) except: (1) farming; (2) finance, insurance and real estate; and (3) services.

Income originating in these sectors consists of wages and salaries; supplements to wages and salaries; and except in the case of government, business income and net interest. Estimates of wages and salaries, which account for the largest part of income produced, have already been described. Procedures used in constructing the other components are as follows:

Supplements to wages and salaries. These consist of two subcategories: "other labor income" for which state data are available, and "employer contributions to social insurance." The size of both these items is closely related to the size of wage and salary payments, and Chicago estimates were constructed for each industry by apportioning state or national totals to the area on this basis.

Business income. This category consists of corporate profits before income taxes (adjusted for inventory valuation) and proprietors' income (also adjusted); and it accounts for about one-fifth of Chicago income produced in the industries being discussed. Chicago estimates were constructed by allocating national totals, industry by industry, in accord with CMA's relative share in wages and salaries in each industry. Since an independent estimate of proprietory income is available (see Section E) corporate profits can be estimated by subtracting proprietory income from total business income.

Net interest. CMA estimates for this category of income produced are far less satisfactorily based than the other components. This is due partly to the fact that the national estimates are themselves relatively weak and partly to the fact that adequate local allocators are not available. However, this form of income accounts for less than one per cent of total income produced by the industries being discussed, and the relative crudeness of net interest estimates originating in Chicago has little effect on the overall reliability of the derived totals. In the absence of alternative evidence, interest income originating in Chicago was esti-

mated, industry by industry, on the assumption that it is proportional to Chicago's share in other identifiable components of income produced in each industry.

FARM INCOME

In addition to wages and salaries disbursed, farm income produced in Chicago includes two other items: proprietors' income, and net interest. Proprietors' income was computed for benchmark years 1940, 1950, and 1955 by allocating known state totals for Illinois and Indiana on the basis of Chicago's share in total identifiable net income of farm proprietors tabulated from Census of Agriculture reports for these years. For all other years, Chicago's share in state totals was derived by interpolating benchmark ratios. These ratios, applied to state data which are available annually, provided annual estimates of farm income originating in Chicago. Net interest originating in farming was assumed to vary in direct proportion to Chicago's share in farm proprietory income.

FINANCE, INSURANCE AND REAL ESTATE

Income produced in this sector consists of five parts: wages and salaries, supplements, rental income, net interest, and business income. Of these only the last three items need special discussion.

Rental income produced. This category of income is classified as rental income of persons in the national accounts. It originates in four types of personal property rights: (1) owner-occupied non-farm dwelling units; (2) tenant-occupied non-farm dwelling units; (3) rented farm realty; and (4) personal property interests in business realty, patents, and royalty agreements. (The imputed value of owner-occupied farm realty and dwellings is counted as part of farm proprietory income.)

Primary data on rental income are notably inadequate, even at the national level; and rent estimates are widely recognized

as being considerably less reliable than other items in the national accounts. Due to this fact and the lack of really adequate bases for truly systematic allocation, the rent estimates for Chicago must be regarded as no more than relatively crude approximations, even for benchmark years.

The imputed rental values of owner-occupied dwellings in Chicago were derived from unpublished state-wide estimates of this item for Illinois and Indiana which were prepared by the Department of Commerce and which tie-in with the national accounts. Benchmark allocators for 1940 and 1950 were available in the Censuses of Housing for these years. State data were apportioned to the Chicago Area on the basis of Chicago's share in the number of owner-occupied non-farm dwellings, weighted by the relative average value of such dwellings. Allocators for 1946-49 were obtained by interpolating benchmark allocators on a straight-line basis. For 1951-56, the 1950 allocator was extrapolated according to the relative growth in CMA's estimated share of total households in the state.

Net monetary rents produced by non-farm realty located in Chicago were estimated by direct allocation of national estimates of this variable. Net monetary rents produced by farm realty in Chicago were assumed to be negligible. The value of imputed rental on owner-occupied farm property was counted as part of farm proprietory income in accord with the procedure used in national income accounts.

The allocation basis used for estimating the net monetary rents produced by non-farm property located in Chicago was the ratio of tenant-occupied dwelling units weighted by the median rent of such units. The number of units was tabulated for three benchmark years from the Housing Censuses of 1940 and 1950 and from the National Housing Inventory, 1956. Median rental values for 1940 and 1950 were tabulated from Census of Housing data, and the 1950 values for CMA and the U.S. were extrapolated to 1956 by means of changes in the local and national rent indexes. Allocating ratios for other years were derived from interpolations between benchmark allocators.

Net interest. In the national accounts, the net interest component of national income is measured as the difference between

total private interest paid in society and private interest received by all institutions other than private households. Because of this definition and the fact that finance and insurance institutions generally receive as much or more interest than they pay, the entire item of net interest originating in the industry group as a whole can be regarded as emanating from interest payments by personal landlords on account of mortgage debt owed. This component of income produced by the industry group being considered can therefore be allocated to CMA on the basis of the amount of personal mortgage debt owed on non-farm properties located in Chicago relative to the nation. The estimates of mortgage debt in CMA and the U.S. described in a later section of this Appendix, were applied as an allocating series to national data on net interest originating in finance, insurance, and real estate.

Business income. National data on corporate profits before taxes plus proprietors' income produced in the finance, insurance, and real estate industry group was allocated to CMA according to CMA's share of wage and salary disbursements in the industry.

SERVICE INDUSTRIES

In addition to wages and salaries (described earlier) and supplements (allocated as a function of wages and salaries) the service sector generates net interest income and business income. The largest segment (about 98 per cent) of net interest items produced within this sector arises in the household segment of the industry in the form of interest payments on consumer debts. CMA's share in this item can be assumed to be equal to the share of CMA residents in total consumer debt outstanding. However, the latter factor cannot be estimated with any accuracy because primary data are lacking. It was therefore assumed that the share of CMA residents in total consumer debt is equal to the ratio of consumer loans held by CMA banks to the total of such loans at all banks in the continental United States. These data were estimated directly for CMA banks for six benchmark

years: 1945, 1949, 1950, 1953, 1954, and 1955. Estimates for the remaining years were derived from available state-wide data published by the Comptroller of Currency and CMA/state allocating ratios interpolated between ratios known for benchmark years.

A relatively trivial part of net interest in this sector (about 2 per cent) arises from the net indebtedness of firms. CMA estimates of this component of interest originating in the service industries and CMA estimates of business income produced by the service industries were both estimated as a direct function of CMA's share in wage and salary disbursements in the industry.

G. Personal Disposable Income

Personal disposable income is that part of personal income remaining after deductions of personal tax and certain non-tax payments to general government. Personal taxes are defined as those levies against individuals, their income or their property, which are not deductible as expenses of business operations. Non-tax payments include miscellaneous non-business payments by individuals for specific services as are provided within the framework of general government. Included are licensing fees, fines and penalties, but purchases from government enterprises are excluded.

Estimates of personal taxes and disposable income are available on a regular and detailed basis for the nation as a whole. Estimates for individual states have been published in considerably less detail and only for selected years. These state estimates are based on personal income-tax data supplied by the U.S. Treasury Department and the statistics on revenues of state and local governments compiled by the Bureau of the Census.[16]

For purposes of this study, estimates of CMA disposable income were constructed for three benchmark years, 1940, 1950, and 1955. In the absence of actual local tabulations on tax collections from residents, it was necessary to construct estimates

16. U.S. Department of Commerce, *Personal Income by States Since 1929*, pp. 29-33.

of CMA tax payments through the use of available relationships between different levels of gross personal income per household. Ideally, the calculations should be based on net taxable income per tax return — but the basic data required for such an approach were not available. The following procedures were therefore used in constructing estimates of personal tax and non-tax payments by CMA residents.

(1) Individual state estimates of personal tax and non-tax payments implicit in the Department of Commerce estimates of disposable income were segrated for all individual states, into two components: (a) federal and (b) state and local. Federal tax data, on an individual state basis, were obtained from personal income tax data published by the Internal Revenue Service. The statewide tax collections reported in this source required minor adjustments to allow for a slight difference between total tax collections as reported by the Internal Revenue Service and those contained in the national income accounts.[17]

(2) The estimates of Federal tax payments, by state, were converted to a *per household* basis for each state, through the use of Census data on the number of households (except in 1940 when the number of occupied dwelling units was used).

Total personal income, by state, was similarly converted to a *per household* basis.

The two series provided the basis for the following regression equations relating the level of taxes per household (y) to the level of personal income per household (x).

1940 ..... $y_c = -31.55 + 0.02982\ x$
1950 ..... $y_c = -408.00 + 0.15990\ x$
1955 ..... $y_c = -448.81 + 0.17012\ x$

(3) Federal tax payments per household for CMA were computed from the regression equations and from estimates of total personal income per household in CMA.

(4) Estimates of state and local taxes for Illinois and Indiana were apportioned to the Illinois and Indiana parts of CMA on a per household basis.

17. For a detailed explanation of the method used, see: *Allocating the Federal Tax Burden Among the States* (New York: Tax Foundation, Inc., 1957), pp. 6-13.

H. Personal Consumption Expenditures

Personal consumption expenditures as defined in the national economic accounts consist of all expenditures made by individuals as consumers, measured at the current market prices. It excludes the purchases of capital assets, but includes current depreciation accruals on owner-occupied homes. In addition to goods and servies normally purchased on the market, personal consumption expenditures also include certain imputed items such as food produced and consumed on farms, the imputed rental value of owner-occupied homes, as well as some imputed values for services acquired as a by-product of other major transactions, e.g., services furnished by the financial institutions to their customers for which no explicit charge is made.

There are no data on personal consumption expenditures for any area less than the nation. Estimates of consumer spending by CMA residents for two benchmark years, 1950 and 1955, were prepared to supplement other major measurements of the area and to provide an independent check on the estimates of personal savings derived from financial asset data. The consumption expenditure estimates provide reasonably good approximations of the level and structure of consumer spending in the area but clearly do not have the same degree of reliability as the other series in this study.

The basic estimating procedure used in constructing personal consumption expenditure estimates for CMA residents consists of a detailed and systematic allocation of known national totals for each class of expenditure. With few exceptions, the allocators used are derived from sources similar to those used by the U.S. Department of Commerce for annual and quarterly extensions of the national estimates.[18]

The method is described in detail in Exhibit 11 with specific references to allocators used in each case. These procedures are not the most desirable but they are the most practicable. In addition to errors which this method would introduce even on

18. U.S. Department of Commerce, Office of Business Economics, *National Income Supplement*, 1954 ed., pp. 103-35.

a national basis, it has shortcomings which compound the possibility of error as the area is reduced in size. These potential errors stem from the use of local retail and service sales data as a means of measuring the share of Chicago residents in total national consumer expenditures. Not all such sales represent

Exhibit 11
Personal Consumption Expenditures in CMA, 1950 and 1955

Line	Item	Amount (Millions of dollars) 1950	1955	Source of Allocating Ratio
I.	GOODS			
1.	Food produced and consumed on farms	6.6	6.3	National income originating on farms
2.	New cars and net purchases of used cars	385.9	543.3	Retail sales of automobile dealers—Retail Trade Census
3.	All other goods except expenditures abroad by U.S. Government employees	5,495.1	6,861.8	Total retail sales of all stores less sales of automobile dealers, dealers in lumber and building materials, and farm equipment dealers — Retail Trade Census
II.	PERSONAL SERVICES			
1.	Shoe cleaning and repair	9.2	9.6	Gross receipts of stores in each of the categories listed —Selected Services Census
2.	Cleaning, dyeing, and pressing	166.0	108.2	
3.	Laundering in establishments		65.3	
4.	Watch and clock repairs. Other personal repair services	18.7	22.2	
5.	Barber shops, beauty parlors, and baths	52.2	76.2	
6.	Other services to households	67.6	66.8	
III.	HOUSING			
1.	Space rental value of owner-occupied non-farm dwellings	667.7	1,861.0	Housing Census, 1950, and related data*
2.	Space rental value of tenant-occupied non-farm dwellings	475.1		
3.	Space rental value of farm housing	—	—	
4.	Hotels and motor courts	44.3	58.0	Gross receipts of hotels, etc. —Selected Services Census

*For 1950 the allocating ratio used was the proportion of the national total of owner-occupied non-farm dwelling units in CMA weighted by the relative median value of such units. The allocating ratio for tenant-occupied units was again the weighted ratio of the number of such units in CMA relative to the nation—with median rents used as weights. (Census reports count all farm housing units in metropolitan areas as part of non-farm totals.)

For 1955 it was not possible to segregate owner-occupied and tenant-occupied space rental values. Chicago's 1950 share in total space rentals (owner and tenant) was adjusted to provide the required 1955 ratio. The adjustment factor was the product of (a) the change in CMA's share in U.S. dwelling units (derived from the national housing inventory of 1956 [U.S. Bureau of the Census, *National Housing Inventory*, 1956]) and (b) the rise in the Chicago rent index relative to the U.S. index.

Exhibit 11, continued
Personal Consumption Expenditures in CMA, 1950 and 1955

Line	Item	Amount (Millions of dollars) 1950	1955	Source of Allocating Ratio
IV.	HOUSEHOLD OPERATION			
1.	Electricity	145.7	160.8	†
2.	Gas		98.3	†
3.	Water	28.4	42.2	†
4.	Telephone and telegraph	101.5	137.1	Number of residential telephones
5.	Domestic service	93.4	117.4	Wages and salaries of domestic service workers
V.	MEDICAL AND DEATH EXPENSES			
1.	Physicians, dentists, and other professional services and services of privately-controlled hospitals and sanatoriums	294.8	409.8	‡
2.	Funeral and burial expenses	51.9	60.5	Gross receipts of funeral homes — Selected Services Census
VI.	PERSONAL BUSINESS			
1.	Brokerage charges, interest, and investment counselling	28.2	46.9	CMA's share in stock ownership
2.	Bank service charges	13.4	20.3	CMA's share in individual demand deposits
3.	Imputed financial services (except life insurance)	97.6	161.3	CMA's share in individual holdings of financial assets at banks, savings and loan associations, and credit unions
4.	Imputed financial services (life insurance)	126.4	161.9	CMA's share in life insurance owned
5.	Legal services	55.0	65.6	§
6.	Interest on personal non-mortgage debt	67.5	113.8	CMA's share of consumer loans at banks
7.	Other personal business expenses	30.9	36.1	CMA's share in Items VI, 1-6 combined

†In 1950 CMA's share in expenditures on electricity and gas was assumed proportional to CMA's share in the product of the number of persons employed in electric and gas utilities (U.S. Census) weighted by their median incomes (U.S. Census). For 1955 personal expenditures on gas were first allocated to Illinois on the basis of gas sales for residential use. Illinois data were then apportioned to CMA on the basis of the number of occupied dwelling units. The same procedure was used for residential sales of electricity with Illinois totals allocated to CMA according to CMA's share in state disposable income.

CMA expenditures for water in 1950 were based on CMA's share in the product of persons employed in water supply and sanitary services (U.S. Census) weighted by median income in these occupations. For 1955 this ratio was trended by the relative change in CMA's share in national disposable income.

‡1950: Based on Census of Population tabulations of the total number of physicians, surgeons, dentists, medical and dental technicians, dietitians and nutritionists, and professional nurses, with each occupation weighted by its reported median income relative to the national counterpart of this number.

1955: The 1950 ratio was trended by the relative change in CMA's share in national disposable income.

§1950: Based on Census of Population tabulations on the number of lawyers and judges weighted by reported median income.

1955: Adjusted as described in Note ‡.

Exhibit 11, continued
Personal Consumption Expenditures in CMA, 1950 and 1955

Line	Item	Amount (Millions of dollars) 1950	1955	Source of Allocating Ratio
VII.	TRANSPORTATION			
1.	Automobile repair and associated garage services	90.5	146.6	Gross receipts of automobile repair shops and garages—Selected Services Census
2.	Insurance and other personal car expense	27.4	48.4	CMA's share in automobile registration
3.	Purchased local transportation	172.4	175.1	**
4.	Purchased inter-city transportation	48.7	56.5	CMA's share in disposable income
VIII.	MISCELLANEOUS SERVICE EXPENDITURES			
1.	Radio and TV repair service	16.3	38.3	Selected gross receipts — Selected Services Census
2.	Motion pictures and other amusements	197.7	220.5	
3.	Private education and research and religious and welfare activities	222.7	321.6	Disposable income
4.	Foreign travel and net cash remittances abroad	45.0	67.5	CMA's share in foreign-born population

**1950 and 1955: Based on relative CMA employment in local street railways, bus lines, and taxicabs weighted by median income.

consumer purchases by local residents: some portions are sales to business, and some to non-residents. On this count, local sales overestimate local consumption. On the other hand local sales do not reflect purchases by residents outside the area, and thus underestimate consumption. There might be instances where the two errors cancel, but in a large retail trade center like Chicago, net sales to non-residents are likely to be positive. The same would hold true for sales of professional services in Chicago such as medical services, or entertainment services — part of which represent net sales to visitors and tourists. However, there is no way of adjusting the raw sales data to allow for these factors, or of measuring the extent to which consumer purchases by CMA residents elsewhere offset the volume of local sales to outsiders.

For the purpose of comparative analysis it should be noted that these limitations of the method probably introduce an upward bias in CMA consumption estimates and consequently the level of personal savings which is derived by subtracting consumption from disposable income, will tend to be an underestimate.

I. Expenditures on New Dwelling Units

Estimates for expenditures on new dwelling units in the CMA were computed as the product of two variables: the number of new dwelling units started and the average cost of each unit. Separate estimates for each of these variables were computed for single-family units (houses) and multi-family units (apartments), and in each case for units within the City of Chicago and the suburban area of the CMA.

The expenditures series derived for the CMA is comparable with the national series on new dwelling unit expenditures compiled by the United States Department of Commerce. It differs from total non-farm residential construction expenditures shown in the national product and income accounts in that latter series also included expenditures on additions and alterations to existing units and expenditures on non-housekeeping units.

The procedure used to compute CMA expenditures is conceptually very similar, though not identical, to the method used by the Department of Labor and Commerce in compiling the national series.[19] In the national estimates new starts are compiled on a monthly basis and expenditure estimates are distributed systematically over assumed construction periods for various classes of dwelling units. Since the CMA estimates for housing starts are on an annual basis, and since year-end carryovers tend to cancel, this refinement was not used in computing the local series.

The only continuous data on new dwelling unit activity in the Chicago Metropolitan Area are those compiled by the Bell Savings and Loan Association from reports by approximately 110 permit-issuing authorities in the Area.[20] A number of adjustments must be made in order to convert these permit enumerations to an estimate of private dwelling unit starts. The major adjustments required are: (1) the exclusion of permits which represent

19. U.S. Department of Labor, Bulletin No. 1168, "Techniques for Preparing Major BLS Statistical Series," *op. cit.*, Ch. 3 and 4, and U.S. Department of Commerce, National Income, 1954 Edition, pp. 122-125.

20. Bell Savings and Loan Association, *Annual Review of New Building in Chicago*, reprinted in Department of City Planning, City of Chicago, *Residential Construction and Related Data.*

conversions of existing units; (2) the exclusion of public housing units; (3) the exclusion of an estimated volume of permits which are allowed to lapse; (4) an adjustment for under-reporting by permit issuing authorities; and (5) the addition of estimated starts in areas which do not require a building permit, namely, the unincorporated portions of Lake County, Indiana and Federally owned land.

Official BLS adjustments of permit data exist for the period 1946-50 and 1954 to date.[21] The earlier series, 1946-50, are adjusted to a "starts" basis and required only the elimination of public starts. Estimates for the latter were derived from Chicago Housing Authority Data.[22] The more recent series were adjusted to exclude public starts, and were also scaled downward by one per cent in each year to allow for permits issued but not used. There is no specific evidence of permit lapses in the Chicago Area. The one per cent allowance is based on sample studies of permit lapses by the BLS for the period 1946-50, which showed that the relatively high lapse rate prevailing during the early post-war years declined to around one and one half per cent by 1949.[23]

For the three-year period not covered by the BLS data, 1951-53, the permit statistics compiled by Bell Savings were adjusted to a starts basis. The number of permits representing conversions of existing units were estimated from statistics collected by the Department of Buildings, City of Chicago; estimates of units built in non-permit issuing areas were derived from data supplied by the Chicago Office of the BLS and the Chicago Office of the Federal Housing Administration; estimates of under-reporting were based on observed relationships between BLS data for 1954-56 and Bell Savings data for these years; a one per cent downward adjustment was used to allow for lapses; estimates of public units started were derived from Chicago Housing Authority data.

21. U.S. Department of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics* and *Construction Review,* July, 1959.

22. Department of City Planning, City of Chicago, *Residential Construction and Related Data.*

23. U.S. Department of Labor, Bureau of Labor Statistics, *Contractors' Use of Home-Building Permits Issued,* Bulletin No. R2101 (Washington, 1952).

For all years estimates of total private dwelling units started were allocated to single-family units (houses) and multi-family units (apartments), and in each case for units within the City of Chicago and the suburban area of the CMA. These allocations were based on evidence contained in the permit data compiled by the Bell Savings and Loan Association.

Average Expenditure for Dwelling Units. As in the national accounts, average expenditure per dwelling unit is measured in terms of costs. These include ordinary construction costs, entrepreneurial fixed costs, an allowance for builders' profit, technical and engineering expenses, interest on hired capital, and factor payments attributable to site improvements. Not included are the costs of land, the costs of selling expenses (either of land or buildings), and builders' profit in excess of those included in the cost estimate.

The average expenditure estimates used in this study were derived by adjusting permit valuation data as shown in the Bell Savings and Loan Statistics. The average permit valuation data[24] — by type of dwelling unit and location — required adjustment for: (a) understatement of costs in permit valuation, and (b) for architectural and engineering costs and site improvement costs — neither of which are included in permit valuation. The basis used for estimating these adjustments, for houses, was data for the CMA and other regions given in a BLS study, *New Housing in Metropolitan Areas, 1949-1951,* U.S. Department of Labor, Bulletin No. 1115 (Washington, 1952). For apartments and apartment units, adjustments were based on the difference between permit valuations and actual costs shown in a sample of private and public units constructed in Chicago.[25]

Total expenditures were derived by applying the estimates of starts, by location and type to the estimates of average expenditures.

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24. In deriving average permit valuation for apartments from the Bell data, it was necessary to exclude permits covering conversion and public units.

25. This evidence was drawn from annual reports of the Chicago Housing Authority and from evidence submitted in the U.S. Senate during the FHA hearings. (U.S. Senate, Committee on Banking and Currency, "FHA Investigation," *Hearings Before the Committee on Banking and Currency,* 83rd Congress, Second Session, Part 3 [Washington, 1954], pp. 2223-2232.)

J. Selected Financial Assets and Liabilities of Individuals

Estimates of selected financial assets held by CMA residents are useful for three purposes. Firstly, they provide a basis for estimating several types of property income received by CMA residents. Secondly, they provide information from which CMA's share in total individual savings can be measured independently of the personal saving estimate derived from disposable personal income and consumption. Finally, information on the accumulation of financial assets by CMA residents is necessary in order to assess the relative growth of the various types of financial intermediaries and institutions located in the area. Direct data on financial assets owned by CMA residents are not available. For purposes of this study, separate estimates for seven major classes of such assets were constructed for selected post-war years.

The asset estimates developed fall into two categories. The first consists of: Time and Savings Deposits at Commercial Banks, Share Capital at Savings and Loan Associations, Postal Savings Deposits, Share Capital in Credit Unions, and Individual Holdings of Demand Deposits. The second category includes Life Insurance Policy Reserves and Holdings of United States Government Savings Bonds. In addition to these major forms of financial assets, estimates were also prepared for liabilities of CMA individuals on account of mortgage debt on residential properties and consumer debt owed to banks.

Primary sources of information on the five items in the first category provide no classification by residence of holder. It was necessary, therefore, to assume that the value of assets *held at* institutions located in the CMA is equal to the value of such assets *owned* by CMA residents. This assumption ignores any difference which might exist between the volume of holdings by CMA residents at non-CMA institutions, and the volume of holdings of non-CMA residents at CMA institutions. However, since all of the institutions covered in this category are essentially local in character as far as individual holdings are concerned, the error arising from this asumption is likely to be small relative to

the totals involved. In any case, the lack of data precludes any other approach.

For the second category of assets, some basic ownership information is classified by residence of owner. However, for both items in this category, it was necessary to estimate holdings of CMA residents by allocation from national and state totals.

The specific procedures used in constructing estimates of financial assets owned and mortgage liabilities owed by CMA residents are described in greater detail below.

Time and Savings Deposits at Commercial Banks. Continuous information on time and savings deposits at commercial banks is available only for individuals, partnerships, and corporations (IPC) combined. Data collected by the Federal Reserve System show that less than 4 per cent of such deposits at member banks are held by business accounts and for CMA banks the proportion of non-individual holdings is even lower.[26] For purposes of this study, all IPC holdings have been treated as individual assets. Official Federal Reserve benchmark accounts of IPC time and savings deposits at all CMA banks are available for December 31, 1947, June 30, 1949, December 31, 1950, June 30, 1952, June 30, 1954, and June 30, 1956.[27] In addition, the Federal Reserve Bank of Chicago provided special tabulations of deposits held at all insured banks in Chicago for the period 1951-57 and all member banks for 1945 and 1949-57. These latter data cover banks in the CMA as defined by the Federal Reserve Bank of Chicago.[28]

Estimates for years not covered by actual enumerations published by the Federal Reserve System were derived by adjusting Federal Reserve Bank of Chicago data for the small number of excluded accounts. For 1945-49, known totals for member banks were adjusted upward by the 1950 ratio of time deposits at *all* CMA banks to time deposits at CMA member banks. For 1951-56 known totals for insured banks were adjusted by the 1956 ratio.

Share Capital in Savings and Loan Associations. Published

26. See *Federal Reserve Bulletin,* April, 1958, pp. 422-426.

27. Board of Governors, Federal Reserve System, *Distribution of Bank Deposits by Counties,* various issues. There are no mutual savings banks in the CMA.

28. This definition excludes banks which are "essentially rural in character." In 1956, this definition excluded 23 such banks located in areas containing some 2.3 per cent of total CMA population and accounting for about 1.4 per cent of total time deposits.

estimates of share capital in CMA Savings and Loan Associations, which are members of the Federal Home Loan Bank System, are available on a year-end basis for 1948, 1950, and annually since 1952.[29] In addition, data for member associations in the City of Chicago are available on a year-end basis for 1949-51.[30] For 1949 and 1951, these city data were converted to CMA estimates on the basis of known relationships between savings capital held at city associations and CMA associations in 1950.

The member association series (1948-56) were adjusted to cover all associations in the CMA on the basis of evidence contained in a special study made by the Operations Analysis Division of the Federal Savings and Loan Insurance Corporation. This study showed that member savings and loan associations accounted for 99.3 per cent of total assets of all savings and loan associations in the CMA at the end of 1953.

Data for 1945 were tabulated for all associations in the CMA from three sets of detailed reports:

(a) Federal Home Loan Bank Administration, *Annual Report of Savings and Loan Associations,* 1945, which covered all federally chartered institutions;

(b) State of Illinois, Auditor of Public Accounts, *55th Annual Report of Building and Loan Associations,* which covered state chartered institutions in Illinois;

(c) State of Indiana, *Annual Report, Department of Financial Institutions,* which covered institutions in Lake County, Indiana.

Postal Savings Deposits. There are no records of Postal Savings Deposits on a county or metropolitan area basis. CMA estimates were tabulated by summating deposits outstanding at individual postal savings depository offices located in the area.[31]

Share Capital in Credit Unions. The share of CMA residents in this form of savings was assumed to be equal to the share of CMA institutions in total credit union assets. Total assets of CMA

29. 1948 and 1950: U.S. Bureau of the Census, *County and City Data Book,* based on unpublished estimates of the Federal Home Loan Bank Board; 1952-1957: Federal Home Loan Bank Board, *Combined Financial Statements,* annually.

30. *Ibid.*

31. Data for individual offices were provided in annual reports for the Board of Trustees, U.S. Postal Savings System.

credit unions were computed separately for state and federal chartered institutions.

For state chartered institutions, county data were available annually for Lake County, Indiana and for 1945 and 1946 for Illinois Counties.[32] For other years, Illinois counties of CMA were estimated by apportioning Illinois totals on the basis of the 1946 ratio, trended by the relative change in CMA's share in the number of credit unions in Illinois.

Detailed information on assets of federally chartered institutions is not available on a less-than-statewide basis. CMA estimates for these credit unions, which account for approximately 18 per cent of total credit union assets in the CMA, were estimated by allocating assets of Illinois and Indiana institutions to CMA according to CMA's share in the number of such institutions.

Individual Holdings of Demand Deposits. The only evidence on individual ownership of demand deposits is that contained in annual sample surveys of deposit ownership conducted by the Federal Reserve System.[33] The Federal Reserve Board of Chicago used survey data to prepare estimates of individual deposits held at City of Chicago banks for survey dates, 1945-55. In addition, estimates for all CMA banks were prepared for survey dates, 1945, 1948 and 1955.[34] Since total IPC demand deposits at banks in the City of Chicago account for more than three-fourths of such deposits in the CMA, and since deposits at banks sampled in the survey (these include some banks outside the city) account for 80 per cent of deposits at all banks in the area, it was possible to construct estimates of personal deposits at suburban banks for the intervening years, 1946-54. This was done by applying the ratio of personal to total IPC deposits available for benchmark years to estimates of total IPC deposits held at suburban banks.

Life Insurance Policy Reserves. Data on individual ownership

32. State of Indiana, Department of Financial Institutions, *Annual Reports* and State of Illinois, Auditor of Public Accounts, *Annual Reports—Illinois Credit Unions.*

33. National data are reported in the *Federal Reserve Bulletin.* Data for the 7th District, CMA and the City of Chicago are available in special releases of the Federa Reserve Bank of Chicago.

34. 1945-1948: W. E. Hoadley and C. G. Wright, *Employment, Production and Income in the Chicago Industrial Area* (Federal Reserve Bank of Chicago, p. 17) and 1955: unpublished estimates provided by the Bank.

of life insurance policy reserves do not exist on a less than statewide basis. Unpublished data on policy reserves held in 49 large life insurance companies, by state of residence of holder, were provided by the Life Insurance Association of America (LIAA) for four benchmark years, 1946-55. These companies hold over 90 per cent of total policy reserves owned in the United States. For benchmark years, total policy reserves were distributed to Illinois and Indiana residents on the basis of their relative share in policy reserves held at these 49 companies. For other years, the share of Illinois and Indiana residents in policy reserves was trended by the change in their share in the total *face value* of life insurance owned.[35]

State totals were allocated to CMA residents on the assumption that per capita ownership in life insurance policy reserves in Illinois outside CMA differs from per capita ownership in policy reserves in Indiana by the minor difference in personal income per capita between the two areas.

United States Series E and H Savings Bonds. County data on sales of E and H savings bonds are available on an annual basis. However, county data on redemptions are not available for private users. In the absence of redemptions data, total individual holdings of U.S. savings bonds by CMA residents were estimated by allocations from national data.[36] The allocation basis used for each year was CMA's share in total cumulative E and H bond sales up to that year.

Mortgage Debt on Residential Properties. There are two separate approaches to the measurement of residential mortgage debt on a regional basis. One approach is to measure mortgage debt owed by CMA residents, regardless of the location of the property mortgaged. The other is to measure mortgage debt owed on property located in CMA, regardless of the residence of the owner. Ideally a computation of the mortgage debt component of financial assets and liabilities of CMA residents requires the first approach. However, direct information is not available on this basis, and the second approach has been used

35. Institute of Life Insurance, *Life Insurance Fact Book.*
36. As reported in the Federal Home Loan Bank Board *Source Book, 1958.*

in this study in order to develop an approximation of the first concept.

At the national level, the most comprehensive series on the volume of residential mortgage debt, by type of holder, are those prepared by Saul Klaman for the National Bureau of Economic Research.[37] The bulk of mortgage debt outstanding is held by four major classes of financial intermediaries: commercial banks, mutual savings banks, savings and loan associations, and life insurance companies. In addition, some part of mortgage debt is owed to individuals, and about 7 per cent of the total is held by federal agencies and miscellaneous financial institutions. For purposes of measuring the net financial position of individuals taken collectively, mortgage holdings by individuals is excluded because this item, which appears both as an asset and as a liability, cancels out in any consolidated statement of the personal sector. Regional estimates of changes in the volume of mortgage debt held by federal agencies and miscellaneous financial institutions cannot be made because primary evidence is lacking.

For purposes of this study net residential mortgage debt owed by CMA individuals is computed as the sum of three series: (1) residential mortgage debt on CMA property held by banks, (2) residential mortgage debt on CMA property held by savings and loan associations, and (3) residential mortgage debt on CMA property held by life insurance companies. This procedure assumes that the net mortgage owed by CMA individuals to these classes of financial institutions is equal to mortgage debt held by financial institutions on property located in Chicago.

Benchmark data on the volume of residential mortgage debt, by holder, on properties located in Chicago, are provided in the Census of Housing of 1950.[38] Because of differences in scope and timing, Census data differ from mortgage holding estimates shown in the National Bureau's study. The Census estimates of mortgage debt on Chicago properties, by holder, were adjusted

37. Saul B. Klaman, *The Volume of Mortgage Debt in the Postwar Decade* (National Bureau of Economic Research, Technical Paper No. 13).

38. U.S. Bureau of the Census, *Census of Housing, 1950*, Vol. IV.

to the National Bureau basis. These adjusted benchmark mortgage holding data were extended for other years in the post-war decade through the use of movements observed in the related series described below.

Residential mortgage loans on Chicago property held by commercial banks (including a very small amount held by mutual savings banks) were extrapolated according to changes in total residential mortgage loans held by all commercial banks located in Chicago. The latter series was itself derived through the same procedures as those described for commercial bank time deposits. Benchmark estimates for residential mortgage holdings by savings and loan associations were extrapolated according to changes in the total volume of residential mortgage loans held by Chicago savings and loan associations. The derivation of this allocating series parallels that used in constructing estimates of share capital held at savings and loan associations in Chicago which was described earlier. Because there is a very close relationship between the measure being extended and the series used in carrying out these extensions, the annual estimates of mortgage debt held by banks and savings and loan associations on CMA properties are likely to be highly reliable.

A similarly appropriate basis for extrapolating life insurance company holdings of residential mortgages on CMA property was not available. Extensions of benchmark data on life insurance company holdings of CMA residential mortgages were made on the basis of changes in total life company holdings of residential and commercial mortgages in Illinois.

Consumer Debt to Commercial Banks. The only part of consumer debt for which reliable regional data are available is the part owed to commercial banks. Even for this sector, consumer debt owed by residents of a region to banks can be estimated only by assuming that the total volume of such debt in any given area is equal to the volume of consumer loans held by banks located in the area. For a metropolis the size of Chicago, the potential error caused by such an assumption is likely to be negligible.

Annual data on consumer loans outstanding at commercial banks by state, are available in annual reports of the Comp-

troller of the Currency. In addition, estimates of consumer loans held by member banks in the Chicago Metropolitan Area are available beginning with 1945; and similar data for all insured banks in the area are available from 1951 onward. The estimates of consumer loans from banks contained in this study are derived from these sources with minor adjustments required for consumer loans at banks not covered by the Federal Reserve Bank of Chicago's definition of the Metropolitan Area.

INDEX

INDEX

Age-structure, 34, 35, 59 n., 178
Agriculture, 20, 23, 25, 27, 31, 33, 65-67, 70, 78, 120, 170, 174-75, 182
Alexander, John W., 62 n.
Alexandersson, G., 62 n., 63 n.
Andreas, A. T., 65 n.
Andrews, Richard B., 62 n.
Average annual earnings, 79-81, 171-74

Babb, Jervis J., 2 n.
Basic industries, 61-63, 74
Bell Savings and Loan Association, 191-93
Business income, 26, 113, 179-85

Capital expenditures, 57-58, 81, 84-87, 91-94
Chicago Association of Commerce and Industry, 83-84
Chicago, City of, 8, 14, 176, 197
  Department of Buildings, 192
  Department of City Planning, 153 n., 191 n., 192
  Housing Authority, 193 n.
Chicago Community Inventory, 13, 76, 167
Chicago-Calumet area, 11, 107, 111, 169-70
Commercial banks, 141-49, 194-95, 200-01
Committee for Economic Development, 1 n., 2 n.
Commonwealth Edison Company, 85-91
Communications and public utilities, 21, 23, 25, 39, 65-74, 96, 166
Consumer debt, 141, 157-58, 184-85, 200-01
Consumer price-index, 116
Consumption, 18, 70, 132-35, 187-90
Contract construction, 21, 23, 25, 39, 66, 67, 96, 166
Cook County, 11, 15
Credit unions, 141-49, 196-97

Demand deposits, 197
Disposable income, 185-86
Dividends, 175. *See also* Property income
Domestic service workers, 14, 168-69
DuPage County, 11, 14
Durable goods, 22, 24, 40, 42, 43, 65-74, 76-77, 89-95, 104-07, 164-65

East North Central region, 14, 49-51, 52-58, 115, 119
Economic base, 72-77, 79-84, 96
Ekstedt, I., *et al.*, 62 n.
Employees. *See* Wage and salary workers
Employment, 13-15, 21-22, 31, 37, 38, 48-51, 95, 101-07, 162-68

Employment concentration rates, 63-64, 66
Employment participation rates. *See* Participation rates
Engineering News Record, 85-87
Export quotients, 64
Exports, 62-74, 80-84, 99

Federal Home Loan Bank Board, 196, 198 n.
Federal Reserve Bank of Chicago, 11, 195, 197, 197 n., 201
Federal Reserve System—Board of Governors, 195
Finance, insurance and real estate, 21, 23, 25, 39, 65-74, 96, 182-84
Financial assets, 19, 121, 139-49, 194-98
Florence, Sargent P., 63 n.
Fluctuations, 49, 99-107, 151
Food products, 22, 24, 39, 40, 42, 43, 65-74, 89-96, 164-65, 173

Goldsmith, Raymond W., 136 n.
Government, 21, 23, 25, 39, 65-67, 70, 96, 174
Great Lakes States. *See* East North Central region
Gross product, 17
Growth, 47-51, 59-60, 75-77, 116-19

Hanna, Frank A., 174 n.
Hartley, Joseph R., 82 n.
Hildebrand, George, 63 n.
Hoadley, W. E., and C. G. Wright, 197 n.
Housing starts, 150-53
Housing, stock of, 153, 182-83
Hoyt, Homer, 62 n.

Illinois, 14, 50, 122-24, 131, 147, 164-68, 177, 182-83, 197-98
  Auditor of Public Accounts, 196
  Department of Labor, 15, 41, 162-63
  Department of Public Health, 167 n.
Income produced, 26, 29, 30, 113-15, 178-85
Indiana, 14, 50, 131, 164-68, 177, 182-83, 197-98
  Department of Financial Institutions, 196
Industrial composition, 31, 38-39, 53-58
Industrial contract awards, 87-91
Interest, 26, 113, 177-85. *See also* Property income
Inter-regional comparisons, 8, 36, 51-58, 88, 106-07, 115, 119, 121-27
Investment. *See* Capital expenditures and Industrial contract awards

Johnson, John L., 174 n.

Kane County, 14
Klaassen, L. H., *et al.*, 62 n.
Klaman, Saul B., 199

Labor force, 15, 20, 37, 59, 112
Labor income, 113, 120-21, 125-26, 175-76
Lake County, Illinois, 11, 14, 168
Lake County, Indiana, 11, 14, 197
Life Insurance Association of America, 198
Life insurance companies, 200. *See also* Policy reserves
Life Insurance Fact Book, 198 n.
Location of industry, 53-58, 78-81
Location quotients, 64, 67

Mace, Arthur, 63 n.
Machinery, 22, 24, 40, 42, 43, 65-74, 89-96, 164-65, 173

Man-hours, 40-42
Manufacturing, 22, 24, 39, 40, 42, 43, 48-51, 65-74, 78-81, 89-96, 100, 164-65, 173
McHenry County, 11
Metal-working, 39, 65-74, 89-96, 106
Metropolitan economic data, 4-8, 15, 19-27, 160-62
Migration, 59, 76, 112
Military income, 114-15, 178
Mining, 21, 23, 25, 39, 66, 67, 70, 166
Mortgage debt, 141, 156-57, 184, 198-200

National Bureau of Economic Research, 1 n., 16 n., 167 n., 199
National income, 17. *See also* Income produced
New York Stock Exchange, 147, 176
Non-basic industries, 62-63, 73-74
Non-durable goods, 22, 24, 40, 42, 43, 65-74, 89-95
North, Douglas C., 63 n.

Other labor income, 26, 27, 113, 175-76
Output, 16-18, 29, 31-32, 39. *See also* Income produced

Participation rates, 31, 32-38
Payrolls. *See* Wages and salaries
Personal income, 16, 27, 174-84
  Comparison with other areas, 115, 121-27
  Composition, 119
  Per Capita, 117-19, 123-27
  Relation to income produced, 114
Petroleum, coal and chemicals, 22, 24, 39, 40, 42, 43, 66-74, 89-95, 164-65, 173
Plant and equipment. *See* Capital expenditures
Policy reserves, life insurance, 141-49, 198
Population, 13, 14, 20, 30, 48-51, 59, 76, 151-52, 167-70
Porter County, 11, 14
Postal savings deposits, 141-49, 196
Prices, 43, 45. *See also* Consumer price-index
Primary metals, 22, 24, 40, 42, 43, 65-74, 84, 89-96, 173
Printing and publishing, 22, 24, 39, 40, 42, 43, 66-74, 89-96, 164-65
Productivity, 40-46
Property income, 18, 27, 114, 121, 125, 176-77
Proprietor's income, 27, 120-21, 176, 179-85

Real income, 116-18
Regional income. *See* Income produced
Regional Science Association, 1 n.
Rents, 26, 113, 178-85. *See also* Property income
Residential construction, 140-42, 149-55
Retail trade, 21, 23, 25, 39, 66-74, 96, 166

St. Lawrence Seaway, 77, 81-84, 98
Saving, 18-19, 135-38, 139-42, 194-98
Savings and Loan Associations, 141-49, 195-97, 200
Self-employed, 14, 169, 176. *See also* Proprietor's income
Service industries, 21, 23, 25, 39, 66-74, 96, 134-35, 138, 166, 184-85, 188-90
Shyrock, Henry S., Jr., 167 n.
Social insurance accounts, 27, 114-

15, 175, 177-78
Stability. *See* Fluctuations
Standard Industrial area, 9
Standard Metropolitan area, 3, 9-12, 159
Standard Metropolitan district, 10
Steel. *See* Primary metals
Stock-ownership, 146-47

Tax Foundation Inc., 186 n.
Taxes
  Corporate, 114
  Indirect, 17
  Personal, 18, 129-31, 185-86
Thompson, Lorin A., 174 n.
Time deposits, 141-49, 195
Transfer payments, 27, 114-15, 119-21, 175, 177-78
Transportation, 21, 23, 25, 39, 66-74, 81-84, 96, 166, 174
Transportation equipment, 22, 24, 40, 42, 43, 66-74, 89-95, 164-65, 173

Unemployment, 20, 38, 107-12, 169-70
U.S. Bureau of the Census, 3, 11 n., 15, 41, 50, 86, 91, 130, 153 n., 161, 163, 167, 185, 196 n., 199
U.S. Bureau of Labor Statistics, 6, 10, 14, 15, 41, 135, 161-67, 169, 174, 191-93
U.S. Bureau of Old-Age and Survivors Insurance, 161, 163-67, 172-73
U.S. Department of Commerce, 6, 16, 16 n., 78 n., 119, 122, 135, 171, 185, 187, 191
U.S. Savings bonds, 141-49, 198
U.S. Securities and Exchange Commission, 86-87, 132
U.S. Treasury Department, 130, 185-86

Value-added by manufacture, 17 n., 41, 43, 52-58, 92-95

Wage and salary workers, 14, 21-22, 101-07, 162-67
Wages and salaries, 17, 23-24, 26, 27, 113-14, 170-74
Wholesale trade, 21, 23, 25, 39, 66-74, 96
Will County, 11, 14

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